Dell™ Dimension™ 9150 Service Manual

Before You Begin
About Your Computer
Removing the Computer Cover
Technical Overview
Specifications
Advanced Troubleshooting
System Setup
Removing and Installing Parts
Replacing the Computer Cover

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Model DCTA

August 2006 Rev. A01

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Before You Begin

Dell™ Dimension™ 9150 Service Manual

- Getting Started
- Recommended Tools
- Turning Off Your Computer
- Before Working Inside Your Computer

Getting Started

This chapter provides procedures for removing and installing the components in your computer. Unless otherwise noted, each procedure assumes that the following conditions exist:

- You have performed the steps in "Turning Off Your Computer" and "Before Working Inside Your Computer."
- You have read the safety information in your Dell™ *Product Information Guide.*
- A component can be replaced by performing the removal procedure in reverse order.

Recommended Tools

The procedures in this document may require the following tools:

- Small flat-blade screwdriver
- Phillips screwdriver
- Long Phillips screwdriver
- Flash BIOS update program floppy disk or CD

Turning Off Your Computer

NOTICE: To avoid losing data, save and close any open files and exit any open programs before you turn off your computer.

1. Shut down the operating system:
   a. Save and close any open files, exit any open programs, click the **Start** button, and then click **Turn Off Computer**.
   b. In the **Turn off computer** window, click **Turn off**.

   The computer turns off after the operating system shutdown process finishes.
2. Ensure that the computer and any attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for 4 seconds.

Before Working Inside Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help ensure your own personal safety.

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

CAUTION: Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

NOTICE: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

NOTICE: When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

NOTICE: To avoid damaging the computer, perform the following steps before you begin working inside the computer.

1. Turn off your computer.

NOTICE: To disconnect a network cable, first unplug the cable from your computer and then unplug it from the network port or device.

2. Disconnect any telephone or telecommunication lines from the computer.
3. Disconnect your computer and all attached devices from their electrical outlets, and then press the power button to ground the system board.

NOTICE: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

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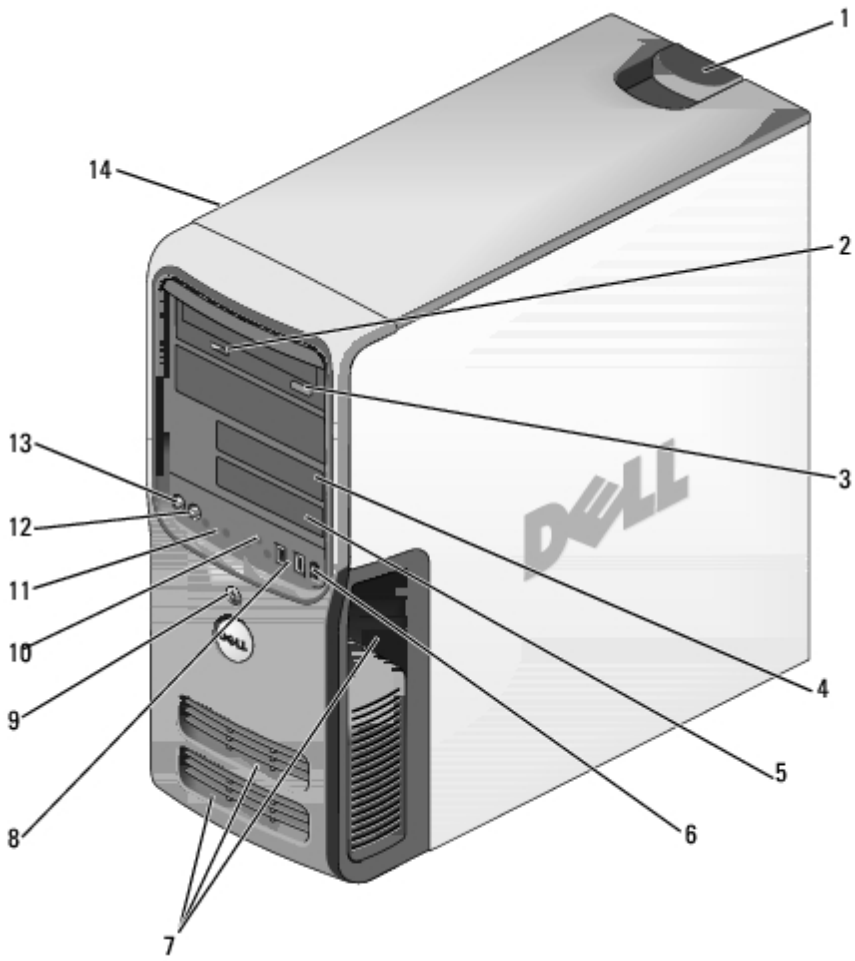
About Your Computer

Dell™ Dimension™ 9150 Service Manual

- Front View of the Computer
- Back View of the Computer

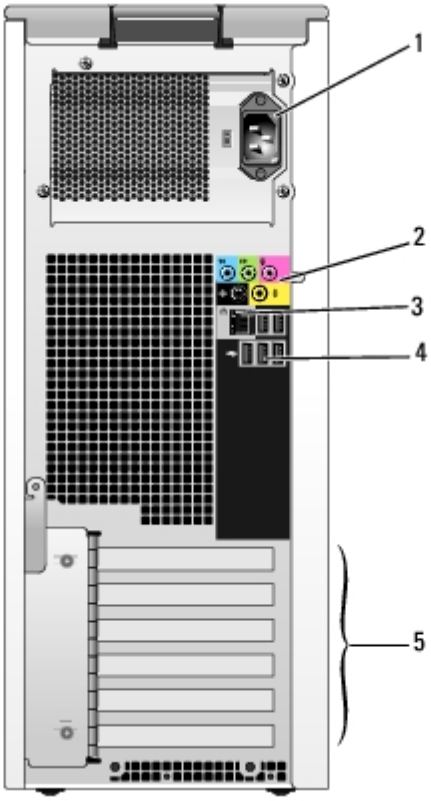
Front View of the Computer



1	cover latch release	Use this latch to remove the cover. See "Removing the Computer Cover."
2	CD or DVD activity light	The drive light is on when the computer reads data from the CD or DVD drive.
3	CD or DVD eject button	Press to eject a disc from the CD or DVD drive.
4	Floppy drive bay	Can contain an optional floppy drive.
5	FlexBay	Can contain an optional floppy drive or optional Media Card Reader.
6	IEEE 1394	Use the optional IEEE 1394 connector for high-speed data devices such as

	connector (optional)	digital video cameras and external storage devices.
7	vents	For adequate cooling, do not block any of the vents. **NOTICE:** Do not use the vents as handles; doing so may result in damage to your computer. Also, ensure that there is a minimum of two inches of space between all vents and any object near these vents.
8	USB 2.0 connectors (2)	Use the front USB connectors for devices that you connect occasionally, such as joysticks or cameras. It is recommended that you use the back USB connectors for devices that typically remain connected, such as printers, keyboards, and mice, or for bootable USB devices, which may not function properly if attached to the front connectors.
9	power button	Press to turn on the computer. **NOTICE:** To avoid losing data, do not use the power button to turn off the computer. Instead, perform an operating system shutdown.
10	hard-drive activity light	The hard drive activity light is on when the computer reads data from or writes data to the hard drive. The light might also be on when a device such as a CD player is operating.
11	diagnostic lights (4)	Use the lights to help you troubleshoot a computer problem based on the diagnostic code. For more information, see "Diagnostic Lights."
12	headphone connector	Use the headphone connector to attach headphones.
13	microphone connector	Use the microphone connector to attach a personal computer microphone for voice or musical input into a sound or telephony program.
14	Service Tag	Used to identify your computer when you access the Dell Support website or call technical support.

Back View of the Computer



1	power connector	Insert the power cable.
2	sound card connectors (5)	• Line-in connector — Use the blue line-in connector to attach a record/playback device such as a cassette player, CD player, or VCR. • Line-out connector — Use the green line-out connector to attach headphones and most speakers with integrated amplifiers. • Microphone connector — Use the pink microphone connector to attach a personal computer microphone for voice or musical input into a sound or telephony program. • Surround connector — Use the black surround connector to attach multichannel-capable speakers. • Center/subwoofer (Center/LFE) connector — Use the yellow subwoofer connector to attach multiple speakers.
3	network connector	To attach your computer to a network or broadband device, connect one end of a network cable to either a network port or your network or broadband device. Connect the other end of the network cable to the network connector on your computer. A click indicates that the network cable has been securely attached. **NOTE:** Do not plug a telephone cable into the network connector. On computers with a network connector card, use the connector on the card.
4	USB 2.0 connectors (5)	Use the back USB connectors for devices that typically remain connected, such as printers, keyboards, and mice, or for bootable USB devices which may not function properly if attached to the front connectors (see "System Setup" for more information on booting to a USB device) It is recommended that you use the front USB connectors for devices that you connect occasionally, such as joysticks or cameras.
5	card slots (6)	Access connectors for any installed PCI or PCI Express cards.

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Removing the Computer Cover

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CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

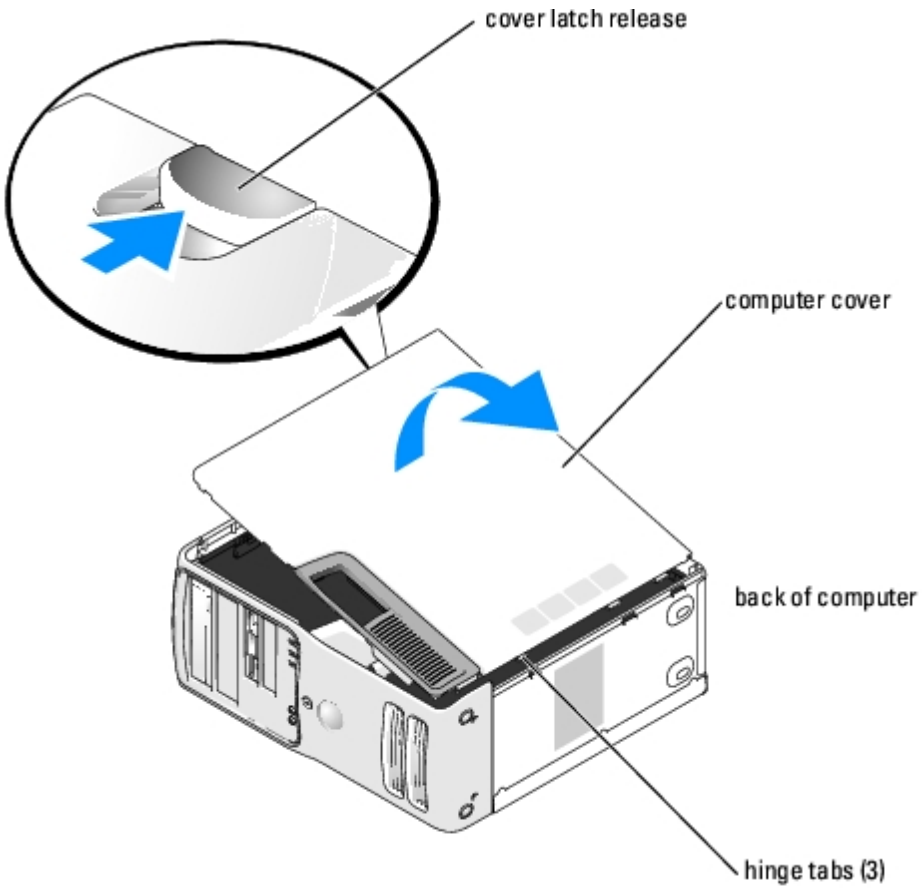
NOTICE: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

1. Follow the procedures in "Before You Begin."
2. If you have installed a security cable, remove it from the security cable slot.

NOTICE: Ensure that sufficient space exists to support the removed cover—at least 30 cm (1 ft) of desk top space.

NOTICE: Ensure that you are working on a level, protected surface to avoid scratching either the computer or the surface on which it is resting.

3. Lay your computer on its side with the computer cover facing up.
4. Pull back the cover latch release on the top panel.



5. Locate the three hinge tabs on the bottom edge of the computer.

6. Grip the sides of the computer cover and pivot the cover up.
7. Lift the cover away and set it aside in a secure location.

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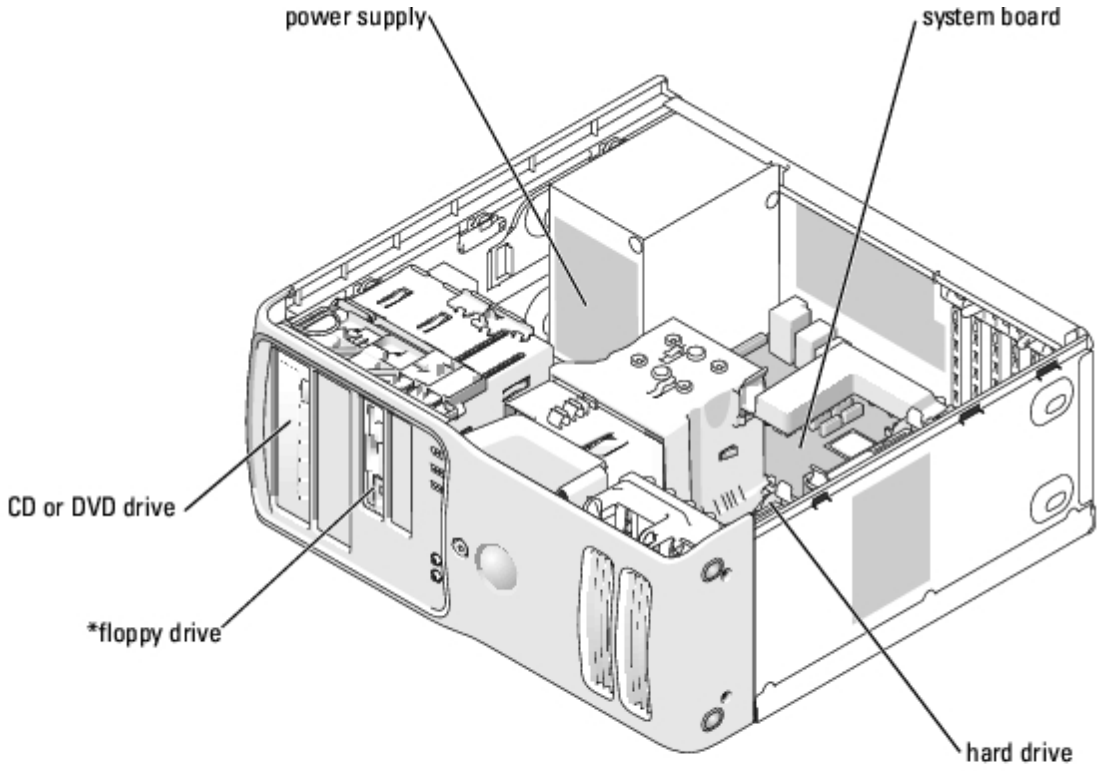
Technical Overview

Dell™ Dimension™ 9150 Service Manual

- Inside View of Your Computer
- System Board Components
- Power Supply DC Connector Pin Assignments

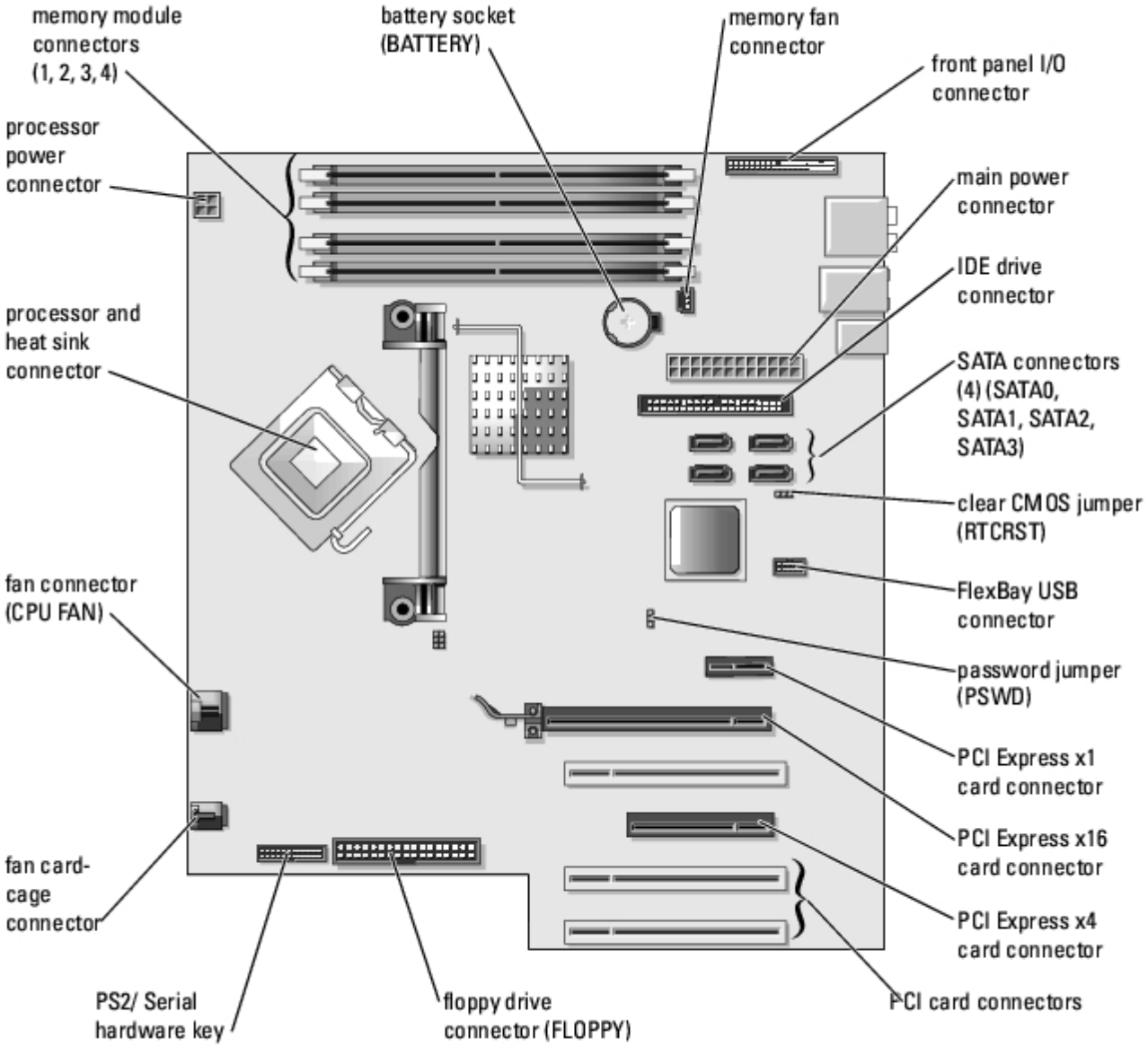
Inside View of Your Computer

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

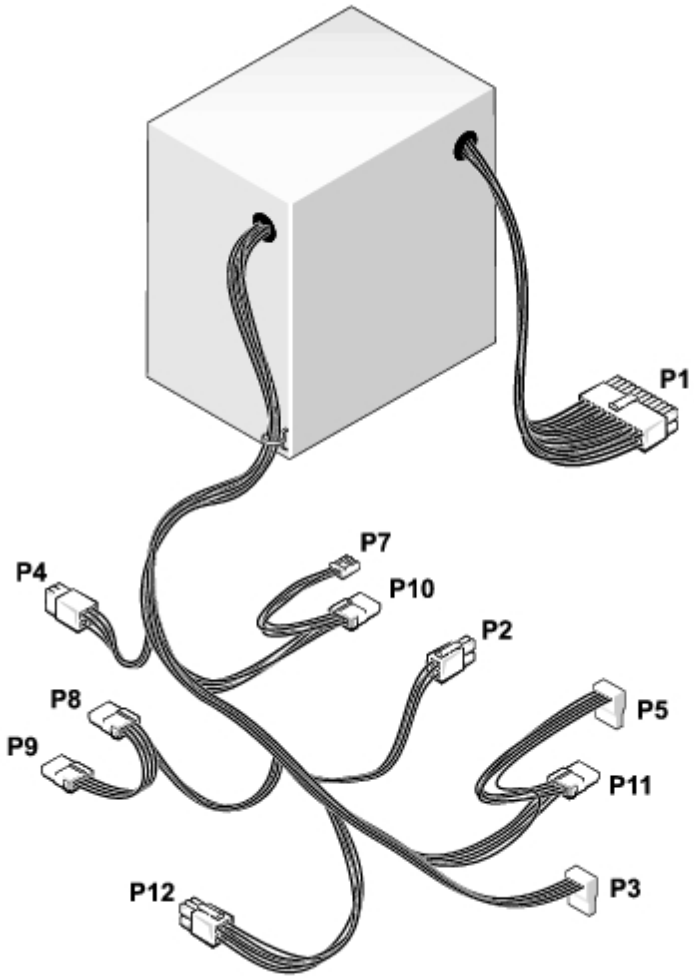


*may not be present on all computers

System Board Components


memory module connectors (1, 2, 3, 4)
battery socket (BATTERY)
memory fan connector
front panel I/O connector
processor power connector
main power connector
IDE drive connector
processor and heat sink connector
SATA connectors (4) (SATA0, SATA1, SATA2, SATA3)
clear CMOS jumper (RTCRST)
fan connector (CPU FAN)
FlexBay USB connector
password jumper (PSWD)
PCI Express x1 card connector
PCI Express x16 card connector
fan card-cage connector
PCI Express x4 card connector
PS2/ Serial hardware key
floppy drive connector (FLOPPY)
PCI card connectors

Power Supply DC Connector Pin Assignments



DC Power Connector P1

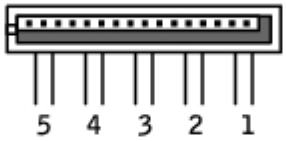
Pin Number	**Signal Name**	**Color**	**Wire Gauge**
1	+3.3 VDC	Orange	18-AWG
2	+3.3 VDC	Orange	18-AWG
3	COM	Black	18-AWG
4	+5 VDC	Red	18-AWG
5	COM	Black	18-AWG
6	+5 VDC	Red	18-AWG
7	COM	Black	18-AWG
8	POK	Gray	18-AWG
9	+5 VFP	Purple	18-AWG

10	+12 VB DC	White	18-AWG
11	+12VB DC	White	18-AWG
12	+3.3 VDC	Orange	18-AWG
13	+3.3 VDC	Orange	18-AWG
14	-12 VDC	Blue	18-AWG
15	COM	Black	18-AWG
16	PS-ON	Green	18-AWG
17	COM	Black	18-AWG
18	COM	Black	18-AWG
19	COM	Black	18-AWG
20	N/C	N/C	18-AWG
21	+5 VDC	Red	18-AWG
22	+5 VDC	Red	18-AWG
23	+5 VDC	Red	18-AWG
24	COM	Black	18-AWG

DC Power Connector P2

Pin Number	Signal Name	18-AWG Wire
1	COM	Black
2	COM	Black
3	+12 VA DC	Yellow
4	+12 VA DC	Yellow

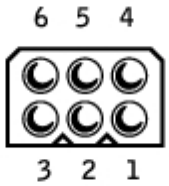
DC Power Connect P3 and P5



Pin Number	Signal Name	18-AWG Wire
1	+3.3 VDC	Orange
2	COM	Black
3	+5 VDC	Red

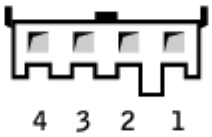
4	COM	Black
5	+12 VB DC	White

DC Power Connector P4



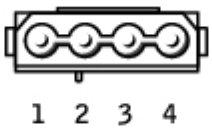
Pin Number	Signal Name	18-AWG Wire
1	N/C	N/C
2	COM	Black
3	COM	Black
4	+3.3 VDC	Orange
5	+5 VDC	Red
6	+12A VDC	Yellow

DC Power Connector P7



Pin Number	Signal Name	18-AWG Wire
1	+5 VDC	Red
2	COM	Black
3	COM	Black
4	+12 A VDC	Yellow

DC Power Connectors P8, P9, and P10

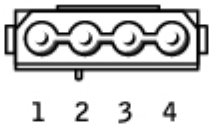


Pin Number	Signal Name	18-AWG Wire
1	+12 VA DC	Yellow

2	COM	Black
3	COM	Black
4	+5V DC	Red

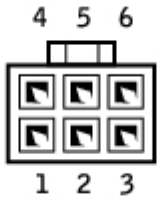
NOTE: The P10 connector is intended for use with PCI Express graphics cards that have power requirements exceeding 75 watts.

DC Power Connector P11



Pin Number	Signal Name	18-AWG Wire
1	+12 VB DC	White
2	COM	Black
3	COM	Black
4	+5V DC	Red

DC Power Connector P12



Pin Number	Signal Name	18-AWG Wire
1	+12 B VDC	White
2	+12 B VDC	White
3	+12 B VDC	White
4	COM	Black
5	COM	Black
6	COM	Black

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Specifications

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Processor	
Processor type	Intel® Pentium® 4 Socket-T with Hyper-Threading or Dual-Core support
Cache	2 MB

Memory	
Type	dual-channel 533- and 667-MHz DDR2
Memory connectors	four
Memory capacities	256 MB, 512 MB, or 1 GB
Minimum memory	512 MB
Maximum memory	4 GB
BIOS address	F0000h

Computer Information	
Chipset	Intel 945P
DMA channels	eight
Interrupt levels	24
BIOS chip (NVRAM)	4 Mb
NIC	integrated-network interface capable of 10/100/1000-Mbps communication
System clock	800- or 1066-MHz data rate

Video	
Type	PCI Express

Audio	
Type	internal 7.1 channel or PCI option cards

Expansion Bus	
Bus type	PCI 32 bit PCI Express x1, x4, and x16
Bus speed	PCI 33 MHz PCI Express 100 MHz
Bus throughput	PCI Express: x1 slot bidirectional speed — 500 MB/s

	x4 slot bidirectional speed — 2 GB/s x16 slot bidirectional speed — 8 GB/s
PCI	
connectors	three
connector size	120 pins
connector data width (maximum)	32 bits
PCI Express	
connector	one x1
connector size	36 pins
connector data width (maximum)	1 PCI Express lane
PCI Express	
connector	one x4
connector size	98 pins
connector data width (maximum)	4 PCI Express lanes
PCI Express	
connector	one x16
connector size	164 pins
connector data width (maximum)	16 PCI Express lanes

Drives	
Externally accessible:	
	two 3.5-inch drive bays (FlexBay) two 5.25-inch drive bays
Available devices	serial ATA drives (2), floppy drive, USB memory devices, CD drive, CD-RW drive, DVD drive, DVD-RW drive, Media Card Reader, and DVD/CD-RW combo drive
Internally accessible:	two 3.5-inch hard-drive bays

Connectors	
External connectors:	
IEEE 1394	one front-panel 6-pin serial connector (with optional card)
Video	15-pin VGA connector 28-pin DVI connector
Network adapter	RJ-45 connector
USB	two front-panel and five back-panel USB 2.0-compliant connectors
Audio	five back-panel connectors for line-in, line-out, microphone, surround, and center/Low Frequency Effects (LFE)

	channel; two front-panel connectors for headphones/microphone
System board connectors:	
Primary IDE drive	40-pin connector
Serial ATA	four 7-pin connectors
FlexBay Drive	USB 10-pin header for optional floppy drive or optional Media Card Reader (3.5-inch bay devices)
Fan	two 3-pin and one 5-pin connector
PCI	three 120-pin connectors
PCI Express x1	36-pin connector
PCI Express x4	98-pin connector
PCI Express x16	164-pin connector

Controls and Lights	
Power control	push button
Power light	green light — Blinking green in sleep state; solid green for power-on state. amber light — Blinking amber indicates a problem with the power supply inside the computer. If the system cannot boot and there is a solid amber light, this indicates a problem with the system board (see "Power Lights").
Hard-drive access light	green
Link integrity light (on integrated network adapter)	green light — A good connection exists between a 10-Mbps network and the computer. orange light — A good connection exists between a 100-Mbps network and the computer. off (no light) — The computer is not detecting a physical connection to the network.
Activity light (on integrated network adapter)	yellow light — Blinking indicates activity on the network.
Diagnostic lights	four lights on the front panel (see "Diagnostic Lights")
Standby power light	AUXPWR on the system board

Power	
DC power supply:	
Wattage	375 W
Heat dissipation	1280 BTU/hr NOTE: Heat dissipation is calculated based upon the power supply wattage rating.
Voltage (See the safety instructions	manual selection power supplies — 90 to

in the *Product Information Guide* for important voltage setting information.)	135 V and 180 to 265 V at 50/60 Hz
Backup battery	3-V CR2032 lithium coin cell

Physical	
Height	46.48 cm (18.3 inches)
Width	18.54 cm (7.3 inches)
Depth	45.42 cm (17.88 inches)
Weight	15.4 kg (34 lb)

Environmental	
Temperature:	
Operating	10° to 35°C (50° to 95°F)
Storage	–40° to 65°C (–40° to 149°F)
Relative humidity	20% to 80% (noncondensing)
Maximum vibration:	
Operating	0.25 G at 3 to 200 Hz at 0.5 octave/min
Storage	0.5 G at 3 to 200 Hz at 1 octave/min
Maximum shock:	
Operating	bottom half-sine pulse with a change in velocity of 20 inches/sec (50.8 cm/sec)
Storage	27-G faired square wave with a velocity change of 200 inches/sec (508 cm/sec)
Altitude:	
Operating	–15.2 to 3048 m (–50 to 10,000 ft)
Storage	–15.2 to 10,668 m (–50 to 35,000 ft)

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Advanced Troubleshooting

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- Power Lights
- Diagnostic Lights
- Beep Codes

Power Lights

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

The power button light located on the front of the computer illuminates and blinks or remains solid to indicate different states:

- If the power light is green and the computer is not responding.
  - Ensure the display is connected and powered on.
  - If the display is connected and powered on, see "Diagnostic Lights".
- If the power light is blinking green, the computer is in standby mode. Press a key on the keyboard, move the mouse, or press the power button to resume normal operation.
- If the power light is off, the computer is either turned off or is not receiving power.
  - Reseat the power cable into both the power connector on the back of the computer and the electrical outlet.
  - If the computer is plugged into a power strip, ensure that the power strip is plugged into an electrical outlet and that the power strip is turned on. Also bypass power protection devices, power strips, and power extension cables to verify that the computer turns on properly.
  - Ensure that the electrical outlet is working by testing it with another device, such as a lamp.
  - Ensure that the main power cable and front panel cable are securely connected to the system board.
- If the power light is blinking amber, the computer is receiving electrical power, but an internal power problem might exist.
  - Ensure that the voltage selection switch is set to match the AC power at your location (if applicable).
- If the power light is steady amber, a device might be malfunctioning or incorrectly installed.
  - Remove and then reinstall the memory modules.
  - Remove and then reinstall any cards.
  - Remove and then reinstall the graphics card, if applicable.
  - Ensure that all power cables are securely connected to the system board.

Diagnostic Lights

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

To help you troubleshoot a problem, your computer has four lights labeled "1," "2," "3," and "4" on the front panel (see "Front View of the Computer"). When the computer starts normally, the lights flash. After the computer starts, all four lights display solid green. If the computer malfunctions, the color and sequence of the lights identify the problem.

Light Pattern	Problem Description	Suggested Resolution
	The computer is in a normal "off" condition or a possible pre-BIOS failure has occurred. The diagnostic lights are not lit after the system successfully boots to the operating system.	Plug the computer into a working electrical outlet. Also see "Power Lights."
	A possible processor failure has occurred.	Reinstall the processor and restart the computer.
	Memory modules are detected, but a memory failure has occurred.	• If you have two or more memory modules installed, remove the modules, reinstall one module (see "Memory"), and then restart the computer. If the computer starts normally, reinstall an additional module. Continue until you have identified a faulty module or reinstalled all modules without error. • If available, install properly working memory of the same type into your computer (see "Memory"). • If the problem persists, contact Dell.
	A possible graphics card failure has occurred.	• If the computer has a graphics card, remove the card (see "Cards"), reinstall it, and then restart the computer. • If the problem still exists, install a graphics card that you know works and restart the computer. • If the problem persists, contact Dell.
	A possible floppy drive or hard drive failure has occurred.	Reseat all power and data cables and restart the computer.
	A possible USB failure has occurred.	Reinstall all USB devices, check cable connections, and then restart the computer.
	No memory modules are detected.	• If you have two or more memory modules installed, remove the modules, reinstall one module (see "Memory"), and then restart the computer. If the computer starts normally, reinstall an additional module. Continue until you have identified a faulty module or reinstalled all modules without error. • If available, install properly working memory of the same type into your computer (see "Memory"). • If the problem persists, contact Dell.
	Memory modules are detected, but a memory configuration or compatibility error exists.	• Ensure that no special memory module/memory connector placement requirements exist (see "Memory"). • Verify that the memory modules that you are installing are compatible with your computer (see "Memory"). • If the problem persists, contact Dell.
	A possible expansion card failure has occurred.	1. Determine if a conflict exists by removing a card (not a graphics card) and restarting the computer (see "Cards"). 2. If the problem persists, reinstall the card that you removed, remove a different card, and then restart the computer. 3. Repeat this process for each card. If the computer starts normally, troubleshoot the last card removed from the computer for resource conflicts (see "Cards"). 4. If the problem persists, contact Dell.

1 2 3 4	Another failure has occurred.	• Ensure that the cables are properly connected to the system board from the hard drive, CD drive, and DVD drive (see "System Board Components"). • If there is an error message on your screen identifying a problem with a device (such as the floppy drive or hard drive), check the device to make sure it is functioning properly. • The operating system is attempting to boot from a device (such as the floppy drive or hard drive); check system setup to make sure the boot sequence is correct for the devices installed on your computer. • If the problem persists, contact Dell.
1 2 3 4	The computer is in a normal operating condition after POST.	None.

Beep Codes

Your computer might emit a series of beeps during start-up if the monitor cannot display errors or problems. This series of beeps, called a beep code, identifies a problem. One possible beep code (code 1-3-1) consists of one beep, a burst of three beeps, and then one beep. This beep code tells you that the computer encountered a memory problem.

Reseating the memory modules may fix the beep code errors in the following table. If the problem persists, see "Contacting Dell" in your *Owner's Manual* for instructions on obtaining technical assistance.

Code	Cause
1-3-1 through 2-4-4	Memory not being properly identified or used
4-3-1	Memory failure above address 0FFFFh

If you hear one of the following beep codes, see "Contacting Dell" in your *Owner's Manual* for instructions on obtaining technical assistance.

Code	Cause
1-1-2	Microprocessor register failure
1-1-3	NVRAM
1-1-4	ROM BIOS checksum failure
1-2-1	Programmable interval timer
1-2-2	DMA initialization failure
1-2-3	DMA page register read/write failure
3-1-1	Slave DMA register failure
3-1-2	Master DMA register failure
3-1-3	Master interrupt mask register failure
3-1-4	Slave interrupt mask register failure
3-2-2	Interrupt vector loading failure
3-2-4	Keyboard Controller Test failure
3-3-1	NVRAM power loss
3-3-2	NVRAM configuration
3-3-4	Video Memory Test failure
3-4-1	Screen initialization failure

3-4-2	Screen retrace failure
3-4-3	Search for video ROM failure
4-2-1	No time tick
4-2-2	Shutdown failure
4-2-3	Gate A20 failure
4-2-4	Unexpected interrupt in protected mode
4-3-3	Timer-chip counter 2 failure
4-3-4	Time-of-day clock stopped
4-4-1	Serial or parallel port test failure
4-4-4	Cache test failure

Message	Possible Cause	Corrective Action
8042 Gate-A20 error	The keyboard controller failed its test.	If you receive this message after you make changes in the system setup program, enter the system setup program and restore the original value(s).
Address Line Short!	An error in the address decoding circuitry in the memory has occurred.	Reseat the memory modules.
C: Drive Error C: Drive Failure	The hard drive is not working or is not configured correctly.	Ensure that the drive is installed correctly in the computer and defined correctly in the system setup program.
Cache Memory Bad, Do Not Enable Cache	The cache memory is not operating.	See "Contacting Dell" in your *Owner's Manual* for instructions on obtaining technical assistance.
CH-2 Timer Error	An error is occurring on the timer on the system board.	See "Contacting Dell" in your *Owner's Manual* for instructions on obtaining technical assistance.
CMOS Battery State Low CMOS Checksum Failure CMOS System Options Not Set CMOS Display Type Mismatch CMOS Memory Size Mismatch CMOS Time and Date Not Set	The system configuration information in the system setup program is incorrect or the battery charge may be low.	Enter the system setup program, verify the system configuration, and then restart the computer.
Diskette Boot Failure	Drive A or B is present but has failed the BIOS POST.	Ensure that the drive is installed correctly in the computer and defined correctly in the system setup program. Check the interface cable at both ends.
DMA Error DMA 1 Error DMA 2 Error	Error in the DMA controller on the system board.	The keyboard or system board may need to be replaced.
FDD Controller	The BIOS cannot	Ensure that the floppy drive or the hard drive is

Failure HDD Controller Failure	communicate with the floppy drive or hard drive controller.	installed correctly in the computer and defined correctly in the system setup program. Check the interface cable at both ends.
INTR1 Error INTR2 Error	An interrupt channel on the system board failed to POST.	The keyboard or system board may need to be replaced.
Invalid Boot Diskette	The operating system cannot be located on drive A or drive C.	Enter the system setup program and confirm that drive A or drive C is properly identified.
Keyboard Error	The BIOS has detected a stuck key.	Ensure that nothing is resting on the keyboard; if a key appears to be stuck, carefully pry it up. If the problem persists, you may need to replace the keyboard.
KB/Interface Error	An error occurred with the keyboard connector.	Ensure that nothing is resting on the keyboard; if a key appears to be stuck, carefully pry it up. If the problem persists, you may need to replace the keyboard.
No ROM Basic	The operating system cannot be located on drive A or drive C.	Enter the system setup program and confirm that drive A or drive C is properly identified.

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System Setup

Dell™ Dimension™ 9150 Service Manual

- Clearing Forgotten Passwords
- Clearing CMOS Settings

Overview

Use system setup as follows:

- To change the system configuration information after you add, change, or remove any hardware in your computer
- To set or change a user-selectable option such as the user password
- To read the current amount of memory or set the type of hard drive installed

Before you use system setup, it is recommended that you write down the system setup screen information for future reference.

NOTICE: Unless you are an expert computer user, do not change the settings for this program. Certain changes can make your computer work incorrectly.

Entering System Setup

1. Turn on (or restart) your computer.
2. When the blue DELL™ logo is displayed, you must watch for the F2 prompt to appear.
3. Once this F2 prompt appears, press <F2> immediately.

NOTE: The F2 prompt indicates that the keyboard has initialized. This prompt can appear very quickly, so you must watch for it to display, and then press <F2>. If you press <F2> before you are prompted, this keystroke will be lost.

4. If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop. Then, shut down your computer and try again.

System Setup Screens

The system setup screen displays current or changeable configuration information for your computer. Information on the screen is divided into three areas: the options list, active options field, and key functions.

Options List — This field appears on the left side of the system setup window. The field is a scrollable list containing features that define the configuration of your computer, including installed hardware, power conservation, and security features.	**Option Field** — This field contains information about each option. In this field you can view your current settings and make changes to your settings. Use the right and left arrow keys to highlight an option. Press <Enter> to make that selection active.

Scroll up and down the list with the up- and down-arrow keys. As an option is highlighted, the **Option Field** displays more information about that option and the option's current and available settings. By pressing <Enter> or the left and right arrow keys, you can toggle between a primary topic (collapsed) and subtopics (expanded).	**Key Functions** — This field appears below the **Option Field** and lists keys and their functions within the active system setup field.

System Setup Options

NOTE: Depending on your computer and installed devices, the items listed in this section may not appear, or may not appear exactly as listed.

System	
System Info	Displays the **System** name, **BIOS Version** number, **Service Tag, Express Service Code**, and **Asset Tag**. **NOTE:** The system name listed in the BIOS may not appear exactly as the name that appears on the computer or in the computer's documentation.
Processor Info	Displays the following information for the processor installed in the system: **Processor Type**, **Processor Clock Speed**, **Processor Bus Speed**, **Processor Cache** Size**, Processor ID** number, whether the processor is **Hyperthreading** or **Multiple Core Capable**, and if the processor has **64-bit Technology**.
Memory Info	Displays the amount of **Installed Memory**, **Memory Speed**, **Memory Channel Mode**, and a description of the **Memory Technology**. This option also displays a table that describes the memory size, whether the memory module is ECC capable, single or dual rank, type, and organization.
PCI Info	Displays the contents of each PCI slot.
Date/Time	Controls the system's internal calendar and clock.
Boot Sequence	Determines the order in which the system searches for boot devices during system startup. **NOTE:** If you insert a boot device and restart the computer, this option appears in the system setup menu. To boot from a USB memory device, select the USB device and move it so it becomes the first device in the list.
Drives	
Diskette Drive	Enables and disables the floppy drives and sets read permission for the internal floppy drive. **Off** disables all floppy drives. **USB** enables the USB floppy drive. **Internal** (the default setting) enables the internal floppy drive. **Read Only** enables the internal drive controller and allows the internal floppy drive read-only permission. **NOTE:** Operating systems with USB support will recognize USB floppy drives regardless of this setting.
SATA Drives 0 through 3	Enables or disables a SATA device (such as a hard-drive). **On** (the default setting) enables the interface so that the device can be used. Displays the **Controller** type (**SATA**), **Port** number the drive is using, **Drive ID** number, **Capacity**, **Link Speed**, and whether the drive is controlled by the **BIOS**.
PATA Drives 0 through 1	Enables or disables an ATA device (such as a CD or DVD drive). **On** (the default setting) enables the interface so that the device can be used. Displays the **Controller** type (**ATA**), **Port** number the drive is using, **Drive ID** number, **Capacity**, **Link Speed**, and whether the drive is controlled by the **BIOS**.

SATA Operation	Determines the integrated SATA controller's operating mode: **RAID Autodetect/ AHCI** (the default setting) – RAID if the drives are signed, otherwise AHCI **RAID Autodetect/ ATA** – RAID if the drives are signed, otherwise ATA **RAID On** – SATA is configured for RAID on every boot.
Onboard Devices	
Integrated NIC Controller	You can set the NIC to **On** (default), **Off**, or **On w/ PXE**. When the **On w/ PXE setting is active** (available only for the future boot process), the computer prompts you to press <Ctrl><Alt><b>. Pressing this key combination causes a menu to display that allows you to select a method for booting from a network server. If a boot routine is not available from the network server, the computer attempts to boot from the next device in the boot sequence list.
Integrated Audio Controller	Enables or disables the onboard audio controller.
USB Controller	Set to **On** (default) so that USB devices will be detected and supported in the operating system.
USB for FlexBay	This field enables and disables the internal USB for FlexBay. **Off** = Internal USB for FlexBay is disabled. **On** = Internal USB for FlexBay is enabled. **No Boo**t = Internal USB for FlexBay is enabled but not bootable. The factory default setting is **No Boot**. **NOTE:** This USB option appears only if a FlexBay device is installed.
Video	
Primary Video	This setting specifies which video controller is primary, **PCI** or **PEG**. **NOTE:** This only applies to a PCI video controller installed in the 32-bit, 33 MHz, PCI expansion slot. Settings are reversed if a PCI video controller is installed in a 64-bit PCIx expansion slot.
Performance	
Multiple CPU Core	This setting specifies whether more than one core is enabled. The performance of some applications may improve with an additional core enabled. The default is **On** (second core enabled).
SpeedStep	If applicable, Intel SpeedStep® appears in the Options List under **Performance**.
HyperThreading	If your computer processor supports Hyper-Threading, this option appears in the Options List (defaults to **On**).
HDD Acoustic Mode	• **Bypass (default)** — Your computer does not test or change the current acoustics mode setting. • **Quiet** — The hard drive operates at its most quiet setting. • **Suggested** — The hard drive operates at the level suggested by the drive manufacturer. • **Performance** — The hard drive operates at its maximum speed. **NOTE:** Switching to performance mode will cause the drive heads to move faster, causing the hard drive to be noisier. However, some drives may not see an increase in data transfer rates. **NOTE:** Changing the acoustics setting does not alter your hard drive image.
Security	This section displays available system security options.
Admin Password	Displays the current status of the system setup password security feature and allows a new system setup password to be assigned and verified.
System Password	Displays the current status of the system's password security feature and allows a new system password to be assigned and verified.
Password Changes	This option locks the system password field with the setup password. When the field is locked, you can no longer disable password security by pressing <Ctrl><Enter> when the computer starts. Also, a valid Admin password is required to change the system password (defaults to **Unlocked)**.
Execute Disable	Enables or disables **Execute Disable** memory protection technology. **On** is the default setting.
Power Management	

AC Recovery	Determines what happens when AC power is restored to the computer. **On** restarts the computer when power is restored after an outage. **Last** returns the computer to its last state before power was removed. **Off** is the default setting.
Auto Power On	Sets the computer to automatically turn on. Choices are **every day** or every **Monday through Friday**. The default setting is **Off**. This feature does not work if you turn off your computer using a power strip or surge protector.
Auto Power Time	Sets time to automatically turn on the computer. Time is kept in the standard 12-hour format (*hours:minutes*). Change the startup time by pressing the right- or left-arrow key to increase or decrease the numbers, or type numbers in both the date and time fields. This feature does not work if you turn off your computer using a power strip or surge protector.
Suspend Mode	The options are **S1**, a suspend state where the computer is running in a low-power mode, and **S3**, a standby state where the power is reduced or turned off for most components, however, system memory remains active.
Maintenance	
SERR DMI Message	Some graphics cards require that the SERR DMI message be disabled. The default setting is **On**.
Asset Tag	Displays the system asset tag.
Owner Tag	Displays the system owner tag.
Load Defaults	When **Continue** is selected, this setting restores the computer's default settings. The default setting is **Cancel**.
Event Log	Displays the system event log.
POST Behavior	
Fastboot	When set to **On** (default), your computer starts more quickly because it skips certain configurations and tests.
Numlock Key	This option involves the rightmost bank of keys on your keyboard. When set to **On** (default), this option activates the numeric and mathematical features shown at the top of each key. When set to **Off**, this option activates the cursor-control functions labeled on the bottom of each key.
POST Hotkeys	This option allows you to specify the function keys to display on the screen when the computer starts.
Keyboard Errors	This option enables or disables keyboard error reporting when the computer starts.

Boot Sequence

This feature allows you to change the boot sequence for devices.

Option Settings

- **Diskette Drive —** The computer attempts to boot from the floppy drive. If the floppy in the drive is not bootable, the computer attempts to boot to the hard drive.
- **Hard Drive** — The computer attempts to boot from the primary hard drive. If no operating system is on the drive, the computer attempts to boot to the next bootable device.
- **CD Drive** — The computer attempts to boot from the CD drive. If no CD is in the drive, or if the CD has no operating system, the computer attempts to boot to the next bootable device.

NOTE: The computer attempts to boot to all bootable devices but if no bootable device is found, the computer generates the No boot device available error message. Press the <F1> key to retry the boot, or press the <F2> key to enter the setup utility.

- **USB Flash Device —** Insert the memory device into a USB port and restart the computer. When F12 = Boot Menu appears in the upper-right corner of the screen, press <F12>. The BIOS detects the device and adds the USB flash option to the boot menu.

NOTE: To boot to a USB device, the device must be bootable. To ensure that your device is bootable, check the device documentation.

Changing Boot Sequence for the Current Boot

You can use this feature, for example, to restart your computer to a USB device such as a floppy drive, memory key, or CD-RW drive.

NOTE: If you are booting to a USB floppy drive, you must first set the floppy drive to OFF in system setup.

1. If you are booting to a USB device, connect the USB device to a USB connector (see "Back View of the Computer").
2. Turn on (or restart) your computer.
3. When F2 = Setup, F12 = Boot Menu appears in the upper-right corner of the screen, press <F12>.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop. Then shut down your computer and try again.

   The **Boot Device Menu** appears, listing all available boot devices. Each device has a number next to it.
4. At the bottom of the menu, enter the number of the device that is to be used for the current boot only.

   For example, if you are booting to a USB memory key, highlight **USB Flash Device** and press <Enter>.

NOTE: To boot to a USB device, the device must be bootable. To make sure your device is bootable, check the device documentation.

Changing Boot Sequence for Future Boots

1. Enter system setup.
2. Use the arrow keys to highlight the **Boot Sequence** menu option and press <Enter> to access the menu.

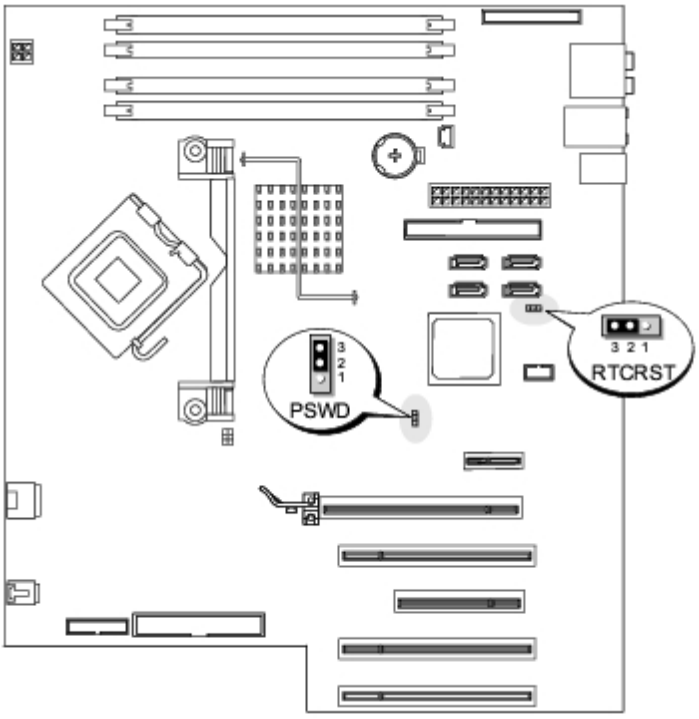
NOTE: Write down your current boot sequence in case you want to restore it.

3. Press the up- and down-arrow keys to move through the list of devices.
4. Press the spacebar to enable or disable a device (enabled devices have a checkmark).
5. Press plus (+) or minus (–) to move a selected device up or down the list.

Clearing Forgotten Passwords

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

1. Follow the procedures in "Before You Begin."



2. Locate the 3-pin password jumper (PSWD) on the system board, and remove the jumper plug from pins 1 and 2.
3. Place the jumper plug on pins 2 and 3.
4. Replace the computer cover.
5. Connect your computer and monitor to electrical outlets, and turn them on.
6. After the Microsoft® Windows® desktop appears on your computer, shut down the computer.
7. Turn off the monitor and disconnect it from the electrical outlet.
8. Disconnect the computer power cable from the electrical outlet, and press the power button to ground the system board.
9. Open the computer cover.
10. Reattach the password jumper (PSWD) to pins 1 and 2 to re-enable the password feature.
11. Replace the computer cover.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

12. Connect your computer and devices to electrical outlets, and turn them on.

Clearing CMOS Settings

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

1. Follow the procedures in "Before You Begin."
2. Reset the current CMOS settings:

a. Locate the 3-pin CMOS jumper (RTCRST) on the system board (see "Clearing Forgotten Passwords").

b. Remove the jumper plug from pins 1 and 2.

c. Place the jumper plug on pins 2 and 3 and wait approximately five seconds.

d. Replace the jumper plug on pins 1 and 2.

3. Replace the computer cover.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

4. Connect your computer and devices to electrical outlets, and turn them on.

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Removing and Installing Parts

Dell™ Dimension™ 9150 Service Manual

- Memory
- Cards
- Drive Panels
- Drives
- Hard Drive
- Floppy Drive
- Media Card Reader
- CD/DVD Drive
- Power Supply
- Processor
- I/O Panel
- Battery
- System Board

Memory

You can increase your computer memory by installing memory modules on the system board. For information on the type of memory supported by your computer, see "Specifications."

NOTICE: Before you install new memory modules, download the most recent BIOS for your computer from the Dell™ Support website at support.dell.com.

Memory Overview

- Memory modules should be installed in *pairs of matched memory size*, *speed*, and *technology*. If the memory modules are not installed in matched pairs, the computer will continue to operate, but with a slight reduction in performance. See the label in the corner of the module to determine the module's capacity.

NOTE: Always install memory modules in the order indicated on the system board.

The recommended memory configurations are:

- A pair of matched memory modules installed in connectors DIMM_1 and DIMM_2

or

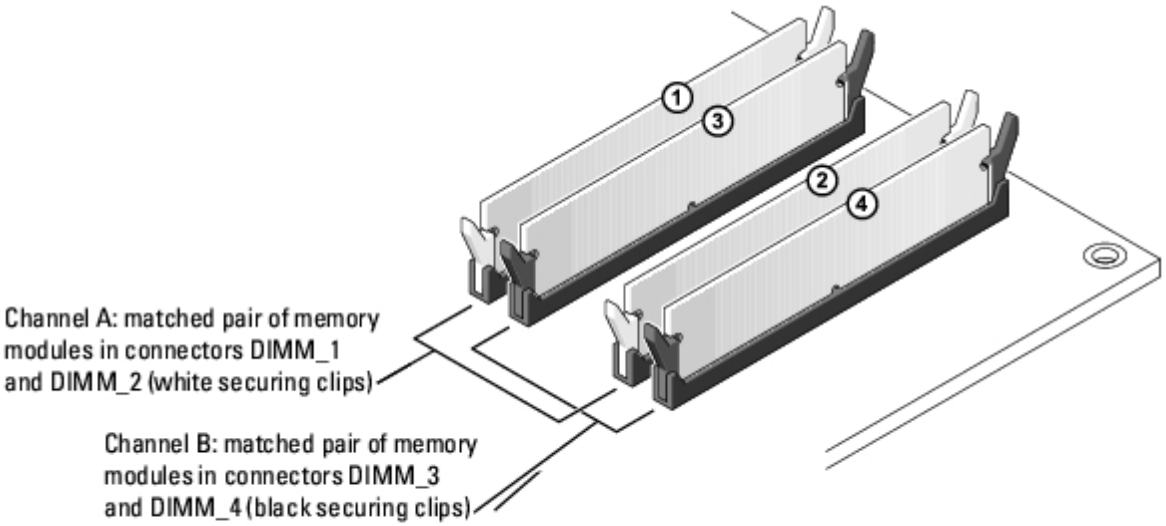
- A pair of matched memory modules installed in connectors DIMM_1 and DIMM_2 and another matched pair installed in connectors DIMM_3 and DIMM_4

NOTICE: Do not install ECC or buffered memory modules. Only unbuffered, non-ECC memory is supported.

- If you install mixed pairs of DDR2 400-MHz (PC2-3200), DDR2 533-MHz (PC2-4300) and DDR2 667-MHz (PC2-5300)

memory, the modules function at the slowest speed installed.

- Be sure to install a single memory module in the DIMM_1 connector, the connector closest to the processor, before you install modules in the other connectors.


1
3
2
4
Channel A: matched pair of memory modules in connectors DIMM_1 and DIMM_2 (white securing clips)
Channel B: matched pair of memory modules in connectors DIMM_3 and DIMM_4 (black securing clips)

NOTE: Memory purchased from Dell is covered under your computer warranty.

NOTICE: If you remove your original memory modules from the computer during a memory upgrade, keep them separate from any new modules that you may have, even if you purchased the new modules from Dell. If possible, do not pair an original memory module with a new memory module. Otherwise, your computer may not start properly. You should install your original memory modules in pairs either in connectors DIMM_1 and DIMM_2 or connectors DIMM_3 and DIMM_4.

Addressing Memory With 4-GB Configurations

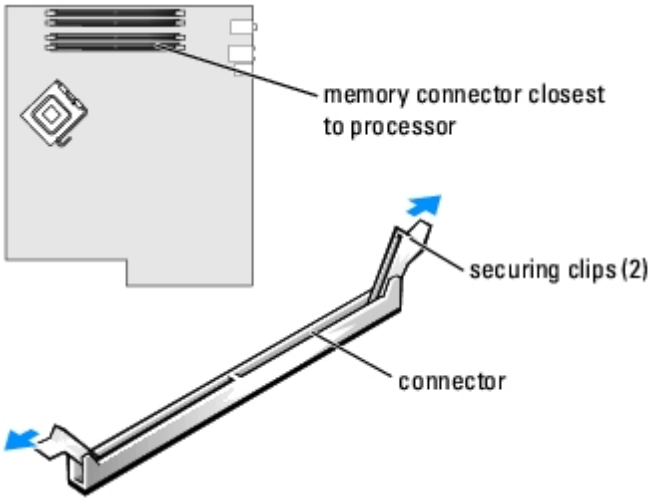
Your computer supports a maximum of 4 GB of memory when you use four 1-GB DIMMs. Current operating systems, such as Microsoft® Windows® XP, can only use a maximum of 4 GB of address space; however, the amount of memory available to the operating system is less than 4 GB. Certain components within the computer require address space in the 4-GB range. Any address space reserved for these components cannot be used by computer memory.

Installing Memory

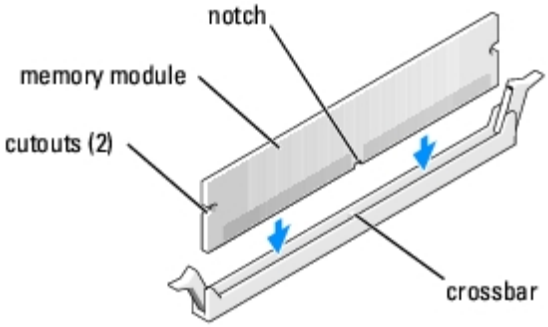
CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

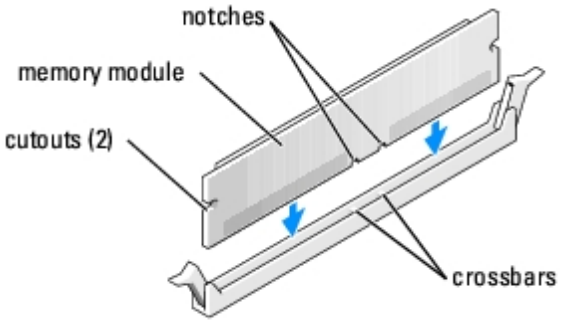
NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer.

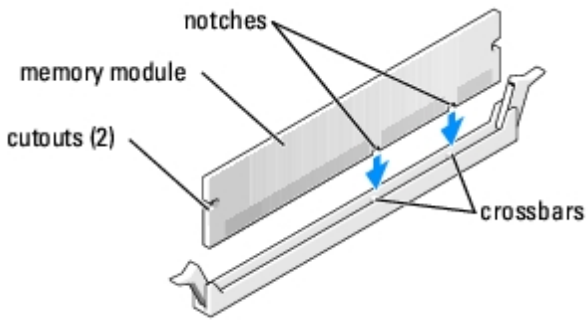
1. Follow the procedures in "Before You Begin."
2. Remove the computer cover.
3. Lay the computer on its side so that the system board is on the bottom of the inside of the computer.
4. Press out the securing clip at each end of the memory module connector.



5. Align the notch on the bottom of the module with the crossbar in the connector.



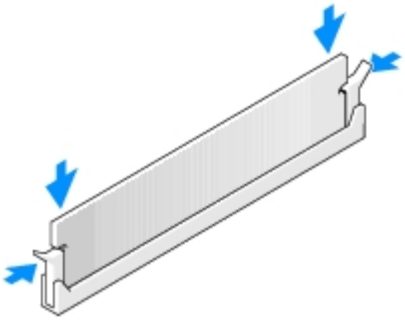




NOTICE: To avoid damage to the memory module, press the module straight down into the connector while you apply equal force to each end of the module.

6. Insert the module into the connector until the module snaps into position.

If you insert the module correctly, the securing clips snap into the cutouts at each end of the module.



7. Replace the computer cover.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

8. Connect your computer and devices to electrical outlets, and turn them on.
9. When the message appears stating that memory size has changed, press <F1> to continue.
10. Log on to your computer.
11. Right-click the **My Computer** icon on your Windows desktop and click **Properties**.
12. Click the **General** tab.
13. To verify that the memory is installed correctly, check the amount of memory (RAM) listed.

Removing Memory

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer.

1. Follow the procedures in "Before You Begin."
2. Remove the computer cover.
3. Press out the securing clip at each end of the memory module connector.
4. Grasp the module and pull up.

If the module is difficult to remove, gently ease the module back and forth to remove it from the connector.

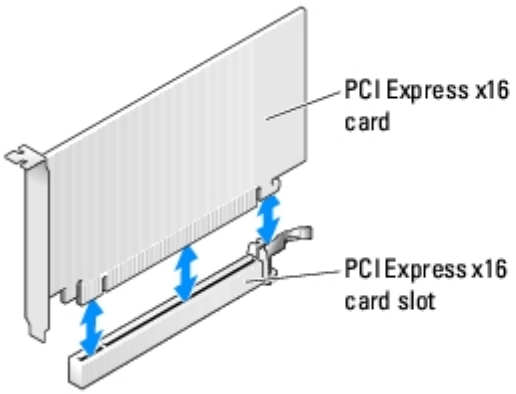
Cards

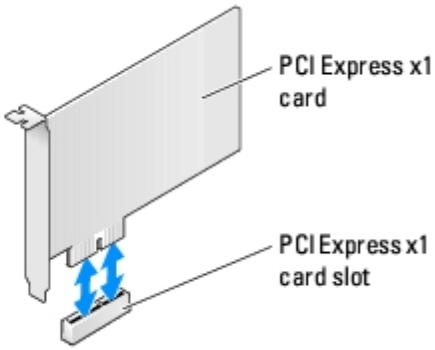
CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer.

Your Dell™ computer provides the following slots for PCI and PCI Express cards:

- Three 33-MHz PCI card slots
- One PCI Express x1 card slot
- One PCI Express x16 card slot
- One PCI Express x4 card slot

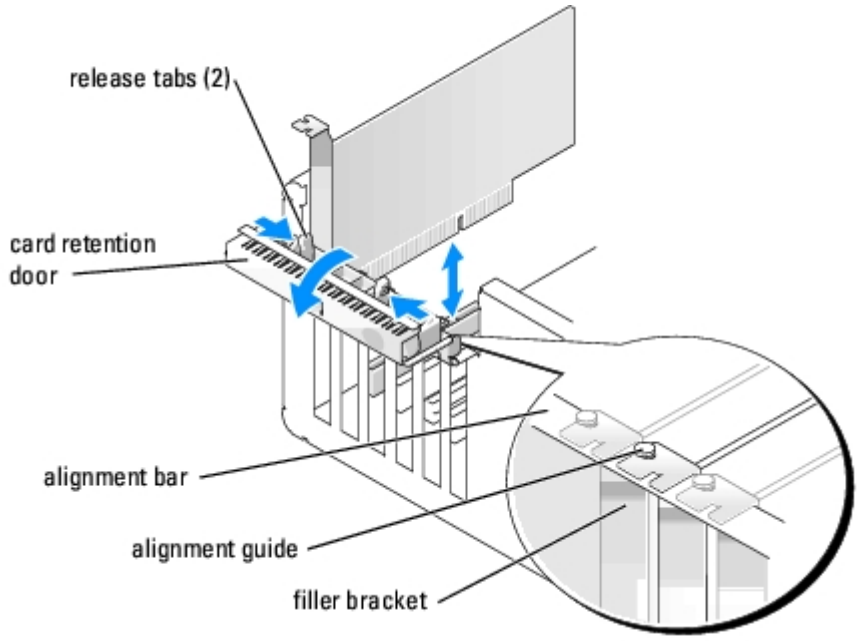




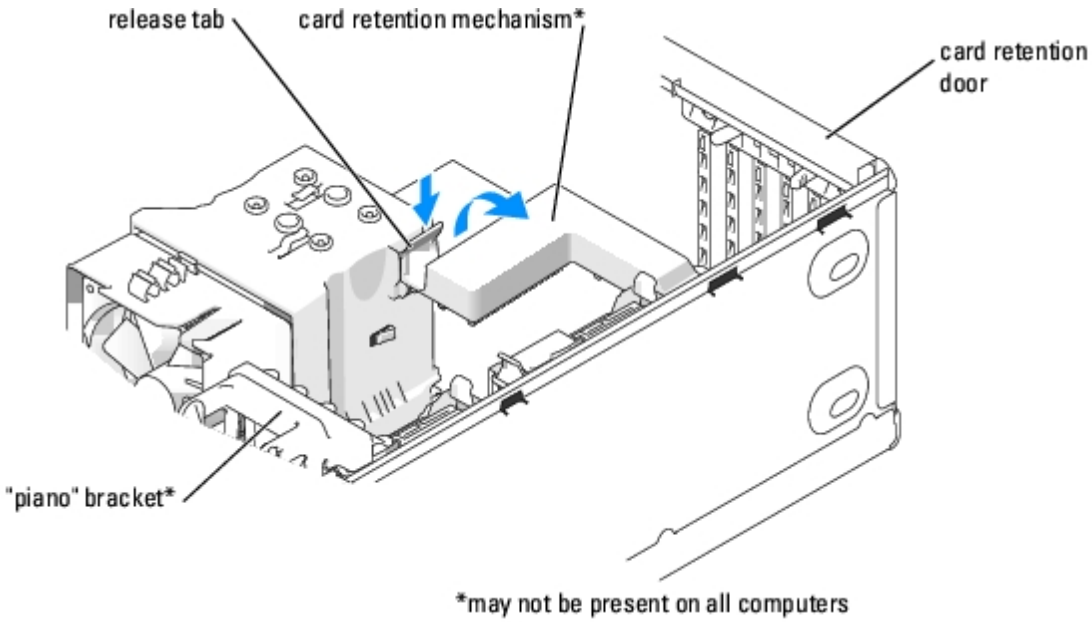
Removing and Installing PCI and PCI Express Cards

NOTE: Dell offers an optional customer kit for Audigy II and IEEE 1394 PCI add-in-cards that includes a front-mounted IEEE 1394 connector.

1. If you are replacing a card, remove the current driver for the card from the operating system.
2. Follow the procedures in "Before You Begin."
3. Remove the computer cover.



4. Push the two release tabs on the card retention door from the inside to pivot the door open. Because the door is captive, it will remain in the open position.

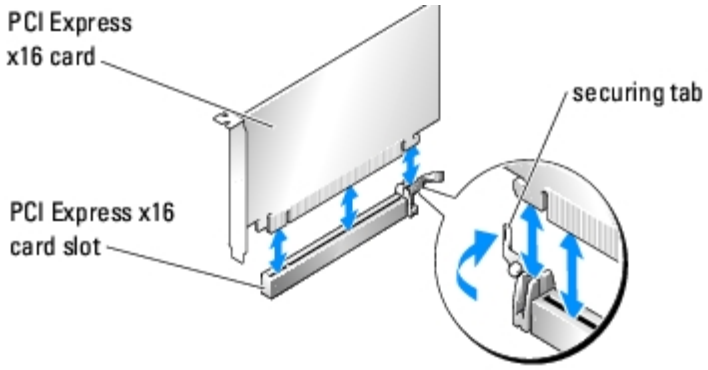


5. If your computer includes a card retention mechanism:

    a. Grasp the end of the card retention mechanism and, while pressing the release tab down with your thumb, rotate the mechanism towards the base of the computer.

    b. Detach the mechanism from its retaining tabs and set it aside in a secure location.

6. If a "piano" bracket (for full-length PCI-E cards) is present on your computer, rotate it upward by pressing the tabs on the side of the bracket toward each other.



7. If you are replacing or removing a card:
    a. If necessary, disconnect any cables connected to the card.
    b. Pull the securing tab (if present), grasp the card by its top corners, and ease it out of its connector.
    c. If you are not replacing the card, install a filler bracket in the empty card-slot opening.

NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets also keep dust and dirt out of your computer.

8. If you are installing a new card, remove the filler bracket to create a card-slot opening
9. Prepare the card for installation.

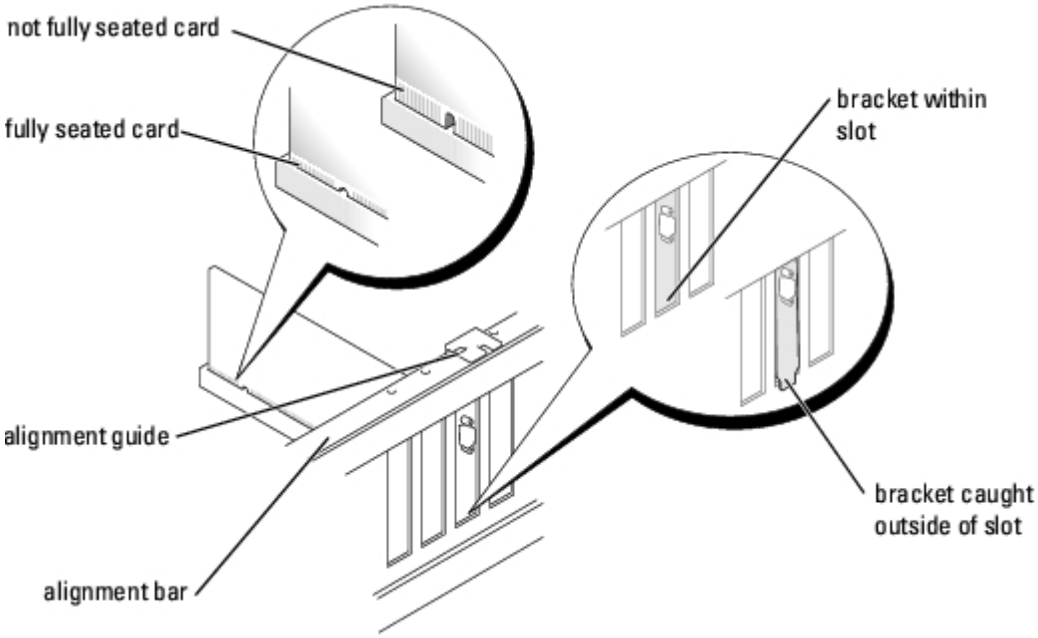
    See the documentation that came with the card for information on configuring the card, making internal connections, or otherwise customizing it for your computer.

CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

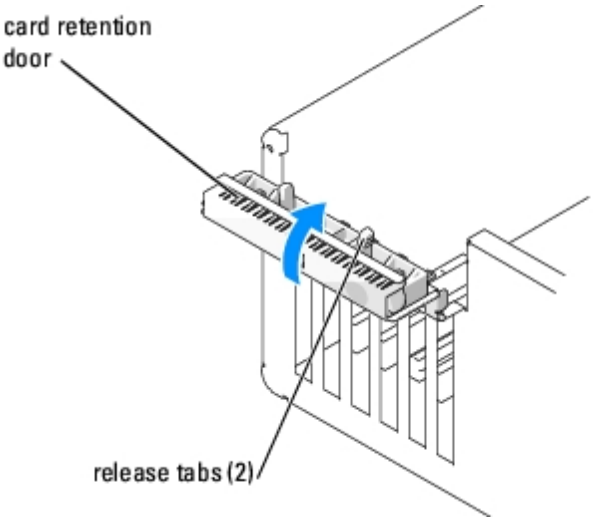
10. Position the card so that it is aligned with the slot and (if present) the securing tab is aligned with the securing slot.

NOTICE: Ensure that you release the securing tab to seat the card. If the card is not installed correctly, you may damage the system board.

11. Place the card in the connector and press down firmly. Ensure that the card is fully seated in the slot.



12. Ensure that:
    - The tops of all cards and filler brackets are flush with the alignment bar.
    - The notch in the top of the card or filler bracket fits around the alignment guide.

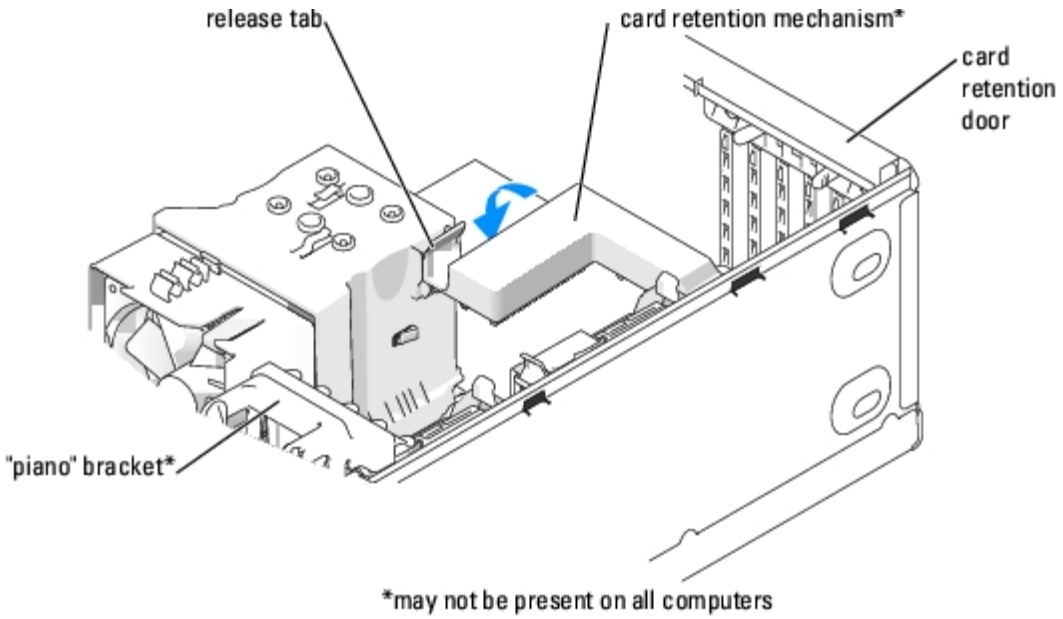


13. Close the card retention door by snapping it into place to secure the card(s).

NOTICE: Do not route card cables over or behind the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

14. If you installed a card, connect any cables that should be attached to the card.

    See the documentation for the card for information about the card cable connections.



15. If a card retention mechanism is present on your computer, reseat it in its tabs, and rotate it down until it snaps into place.
16. If a "piano" bracket (for full-length PCI-E cards) is present on your computer, rotate it down into place.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug the cable into the computer.

17. Replace the computer cover, reconnect the computer and devices to electrical outlets, and then turn them on.
18. If you removed or installed a sound card or a network adapter, see "Network Adapter and Sound Card Settings."
19. Add or remove drivers:
    a. If you removed a card, remove the current driver for the card from the operating system.
    b. If you installed a card, install any drivers required for the card as described in the card documentation.

Network Adapter and Sound Card Settings

If you installed a sound card:

1. Enter system setup, select **Integrated Audio Controller**, and then change the setting to **Off**.
2. Connect external audio devices to the sound card connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel.

If you removed a sound card:

1. Enter system setup, select **Integrated Audio Controller**, and then change the setting to **On**.
2. Connect external audio devices to the audio connectors on the back panel of the computer.

If you installed an add-in network adapter and want to disable the integrated network adapter:

1. Enter system setup, select **Integrated NIC Controller,** and then change the setting to **Off**.
2. Connect the network cable to the add-in network adapter connectors. Do not connect the network cable to the integrated connector on the back panel.

If you removed an add-in network connector:

1. Enter system setup, select **Integrated NIC Controller**, and then change the setting to **On**.
2. Connect the network cable to the integrated connector on the back panel of the computer.

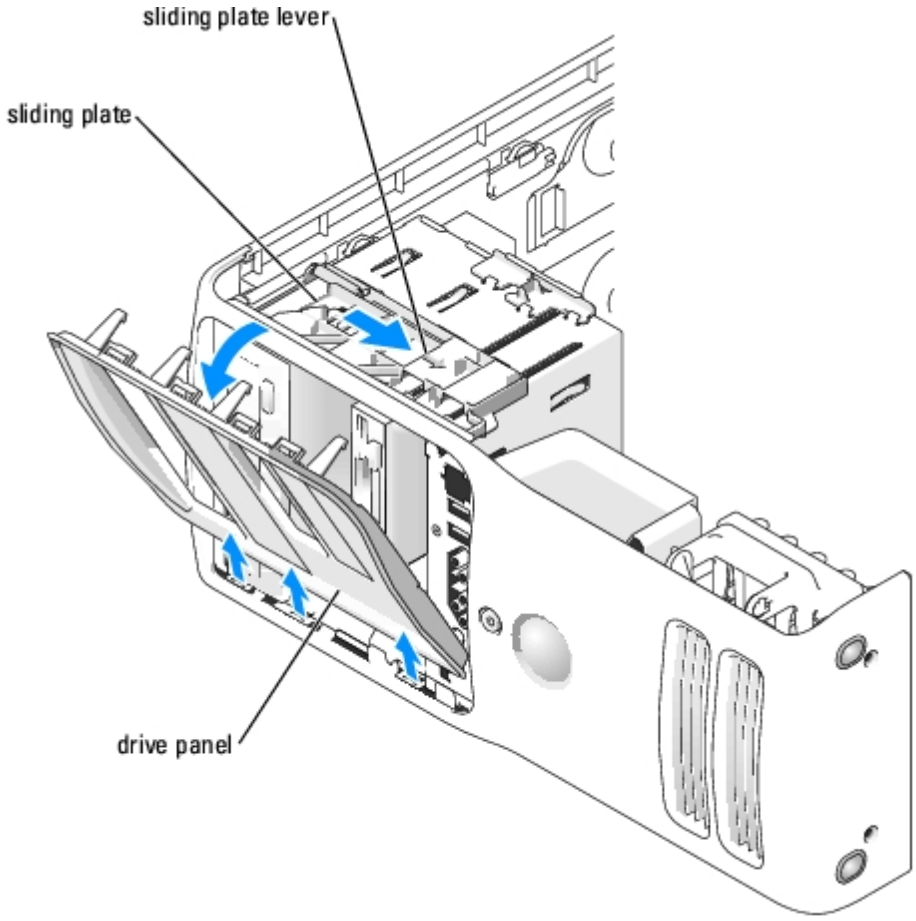
Drive Panels

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.**

⚠ **CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.**

Removing the Drive Panel

1. Follow the procedures in "Before You Begin."



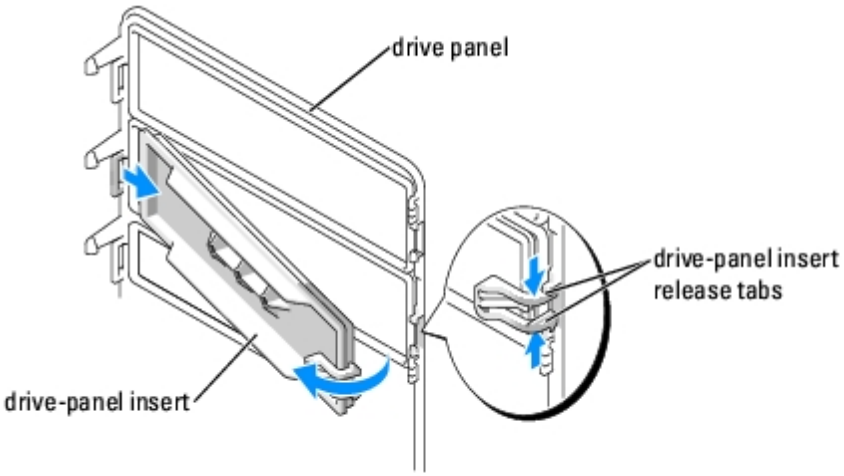
2. Grasping the lever on the sliding plate, pull the sliding plate to the right and hold in place.

NOTE: The sliding plate secures and releases the drive panel and helps to secure the drives.

3. Push from the inside and pivot the drive panel to the left to release the panel from its side hinges.
4. Set the drive panel aside in a secure location.

Removing the Drive-Panel Insert

NOTICE: Drive-panel inserts may contain screws on the inside. You can attach the screws to new drives that do not have any screws.

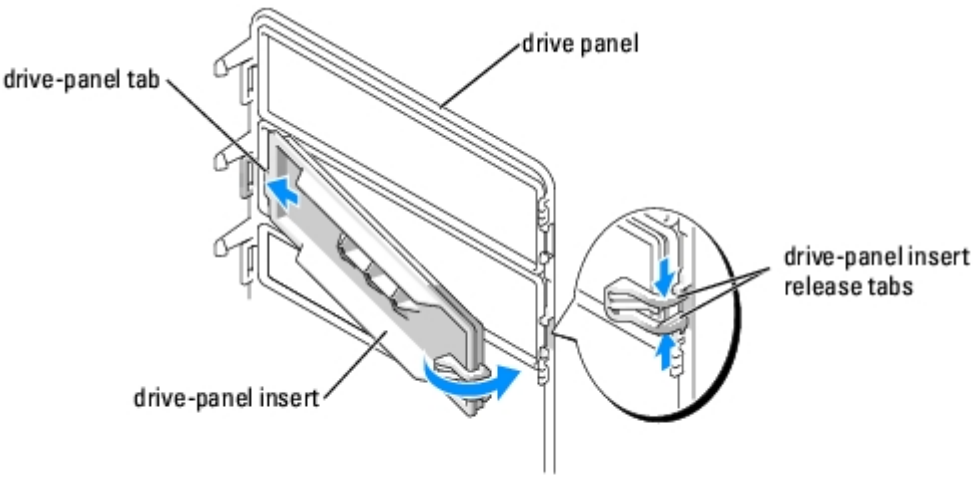


NOTICE: To avoid breaking the drive-panel insert tab, do not pull the insert more than approximately 1 cm (½ inch) away from the drive panel before sliding the tab out of the slot.

1. On the inside of the drive panel, pinch the two drive-panel insert release tabs together and pull the insert out and to the right just enough to release it from the drive panel.
2. Set the drive-panel insert aside in a secure location.

Replacing the Drive-Panel Insert

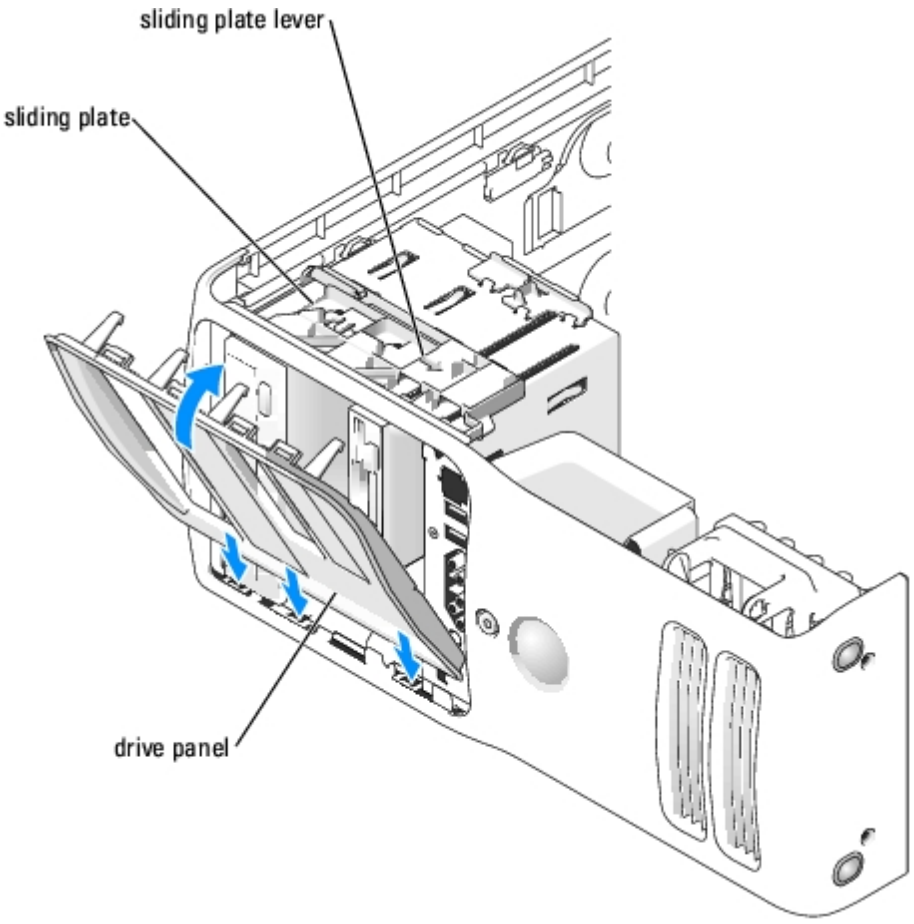
1. Place the drive-panel insert tab into the drive-panel slot.
2. Pinch the drive-panel insert release tabs and press the drive panel insert into place.



3. Ensure that the drive-panel insert is correctly seated in the drive panel.

Replacing the Drive Panel

1. Follow the procedures in "Before You Begin."



2. Align the drive panel tabs with the side-door hinges.
3. Rotate the drive panel toward the computer until the sliding plate lever clicks into place and the drive panel snaps into place on the front panel.

Drives

Your computer supports:

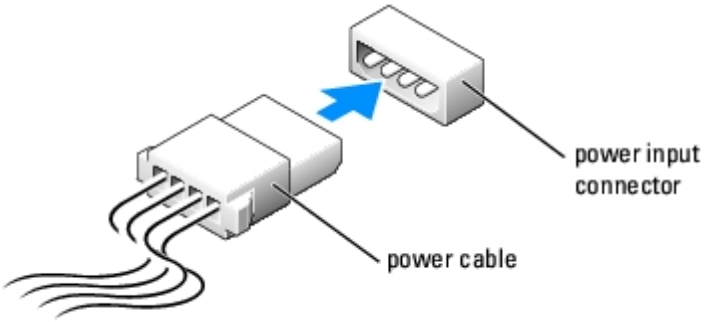
- Two hard drives (Serial ATA)
- One floppy drive
- One flexbay drive
- Two CD or DVD drives

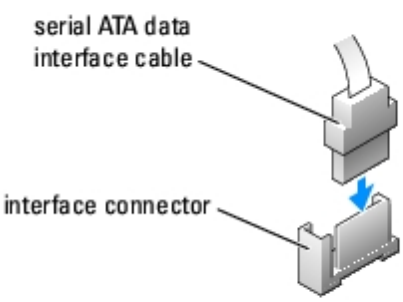
Connecting Drive Cables

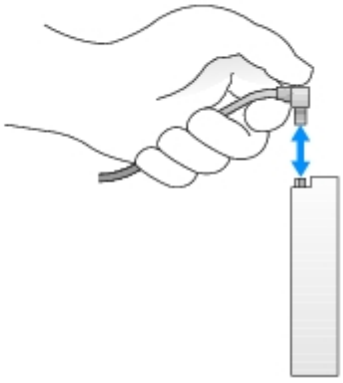
When you install a drive, you connect two cables—a DC power cable and a data cable—to the back of the drive and to the system board. Some CD/DVD drives may also have an audio connector; one end of the audio cable will attach to the drive

connector and the other will attach to the system board.

Connect hard drives to data connectors labeled "SATA" and connect CD/DVD drives to connectors labeled "IDE".







When you connect two IDE devices to a single IDE interface cable and configure them for the cable select setting, the device attached to the last connector on the interface cable is primary or the boot device (drive 0), and the device attached to the middle connector on the interface cable is the secondary device (drive 1). See the drive documentation in your upgrade kit for information on configuring devices for the cable select setting.

Drive Interface Connectors

Most interface connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector. Keyed connectors ensure that the pin-1 wire in the cable (indicated by the colored stripe along one edge of the IDE cable—serial ATA cables do not use a colored stripe) goes to the pin-1 end of the connector. The pin-1 end of a connector on a board or a card is usually indicated by a silk-screened "1" printed directly on the board or card.

NOTICE: When you connect an IDE interface cable, do not place the colored stripe away from pin 1 of the connector. Reversing the cable prevents the drive from operating and could damage the controller, the drive, or both.

When connecting an IDE cable, ensure that you align the colored stripe with the pin 1 connector. When disconnecting an IDE cable, grasp the colored pull tab and pull until the connector detaches.

When connecting and disconnecting a serial ATA cable, hold the cable by the connector at each end. Like IDE connectors, the serial ATA interface connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector.

Hard Drive

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

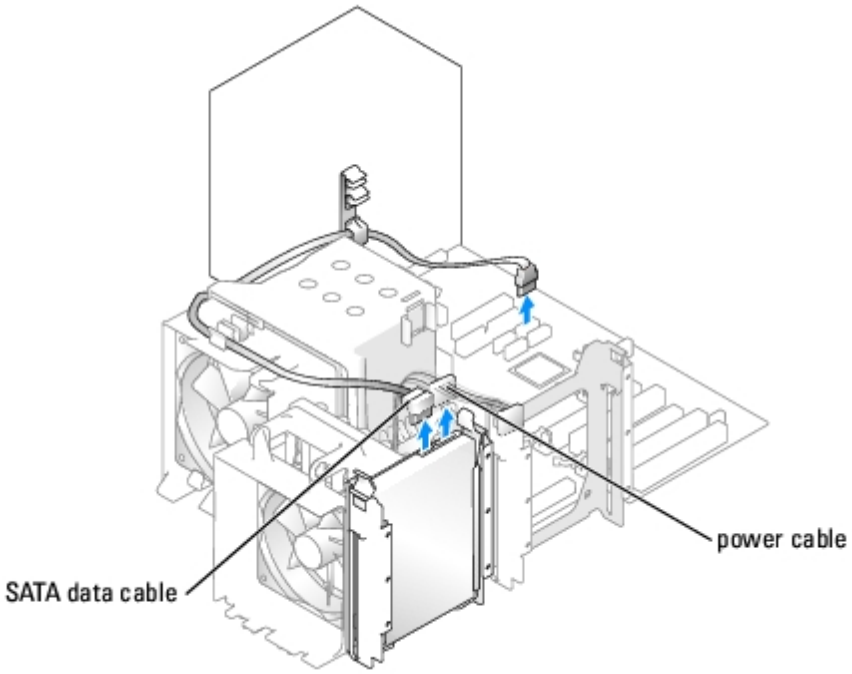
CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

NOTICE: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

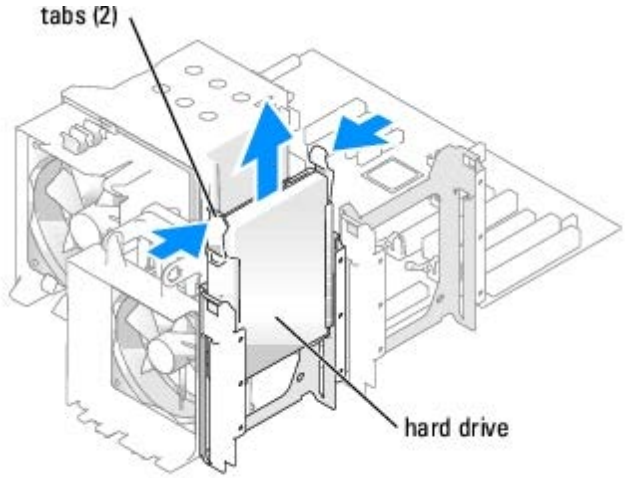
1. If you are replacing a hard drive that contains data you want to keep, back up your files before you begin this procedure.
2. Follow the procedures in "Before You Begin."
3. Remove the computer cover.

Removing a Hard Drive

1. Disconnect the power and SATA data cables from the drive.

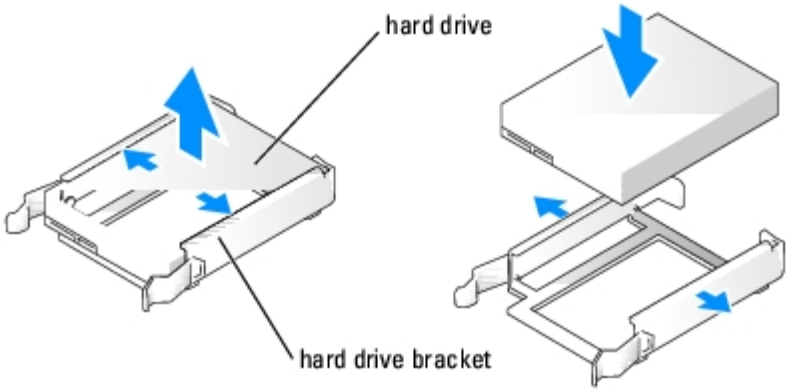


2. Press the tabs on each side of the drive towards each other and slide the drive up and out.

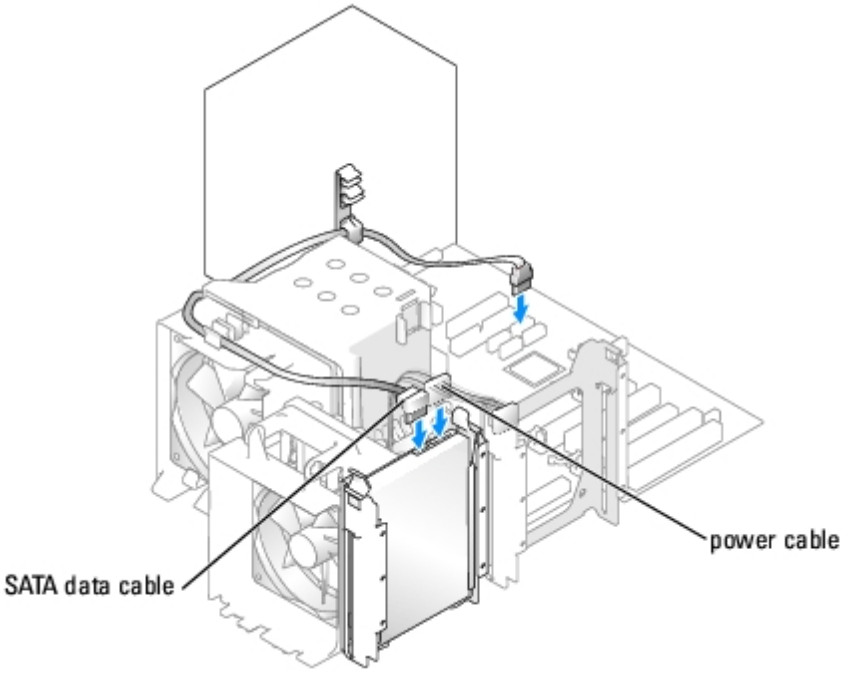


Installing a Hard Drive

1. Unpack the replacement hard drive, and prepare it for installation.
2. Check the documentation for the drive to verify that the drive is configured for your computer.
3. If your replacement hard drive does not have the hard drive bracket attached, remove the bracket from the old hard drive by unsnapping it from the drive.
4. Snap the hard drive bracket onto the replacement hard drive.
5. Install the hard drive into the computer by sliding the drive into place until you feel it click into place.



6. Connect the power and SATA data cables to the hard drive.



7. Check all connectors to be certain that they are properly cabled and firmly seated.
8. Replace the computer cover.

NOTICE: To connect a network cable, first plug the cable in to the network port or device and then plug the cable in to the computer.

9. Connect your computer and devices to electrical outlets, and turn them on.

See the documentation that came with the hard drive for instructions about installing any software required for the operation of the hard drive.

10. If the drive you just installed is the primary drive, insert bootable media into drive A.
11. Turn on the computer.
12. Enter system setup, and update the appropriate **Primary Drive** option (**0** or **1**).
13. Exit system setup, and reboot the computer.
14. Partition and logically format your drive before you proceed to the next step.

    See the documentation for your operating system for instructions.
15. Test the hard drive by running the Dell Diagnostics.
16. If the drive you just installed is the primary drive, install your operating system on the hard drive.

Adding a Second Hard Drive

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

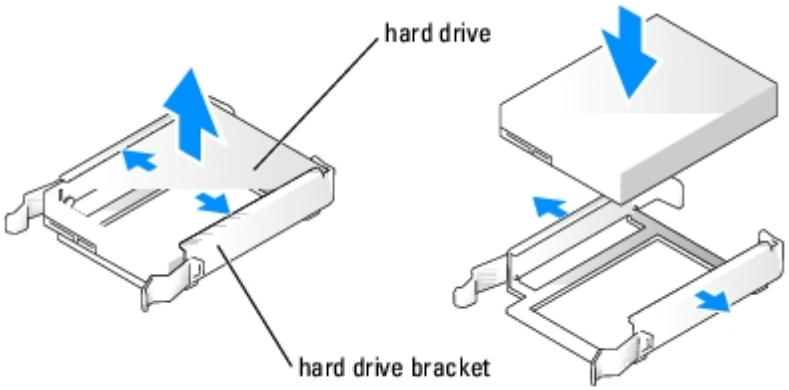
NOTICE: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

1. Check the documentation for the drive to verify that it is configured for your computer.
2. Follow the procedures in "Before You Begin."
3. Press in on the tabs on each side of the hard drive bracket in the empty drive bay and slide the bracket up and out.
4. Snap the hard drive bracket onto the new hard drive.

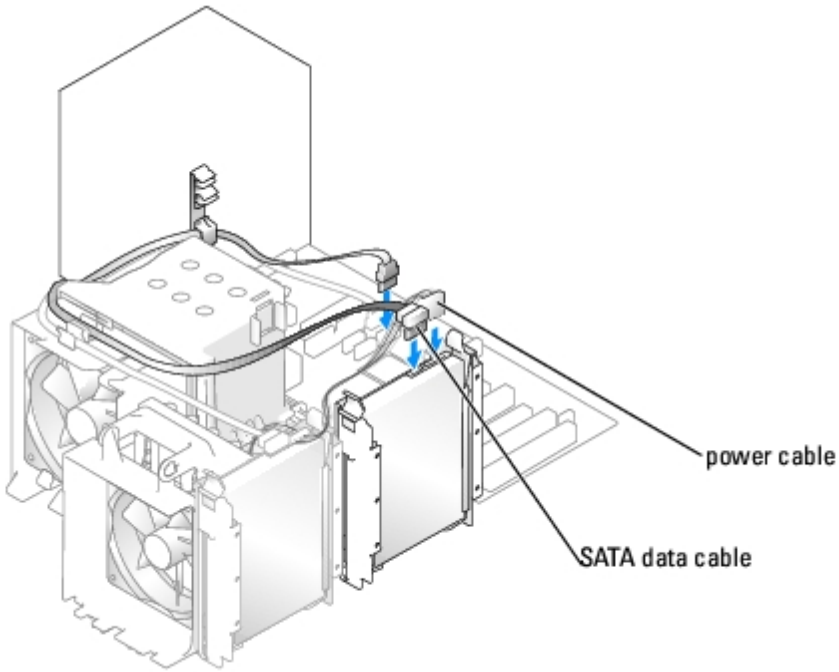
NOTICE: Do not install any drive into the lower hard-drive bay until you have removed the hard drive bracket from the inside of the hard drive bay.

5. Slide the new hard drive into empty bay until you feel a click.

NOTE: If your replacement hard drive does not have the hard drive bracket attached, remove the bracket from the old hard drive by unsnapping it from the drive. Snap the bracket onto the new hard drive.



6. Gently slide the drive into place until you feel a click or feel the drive securely installed.
7. Connect the power and SATA data cables to the drive.



8. Check all connectors to be certain that they are properly cabled and firmly seated.
9. Replace the computer cover.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

10. Connect your computer and devices to electrical outlets, and turn them on.

See the documentation that came with the drive for instructions on installing any software required for drive operation.

Floppy Drive

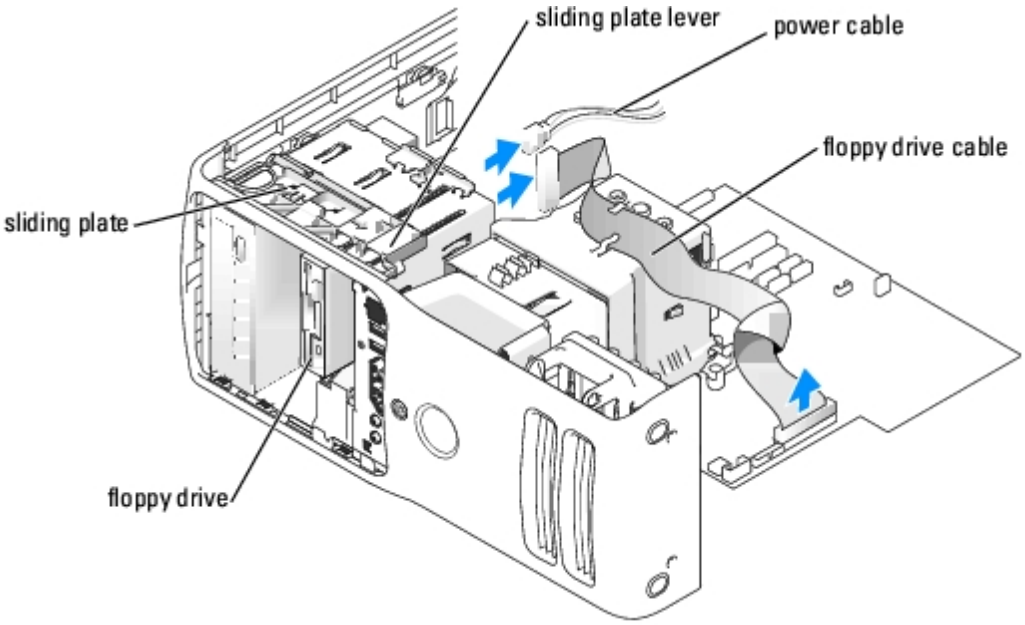
CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

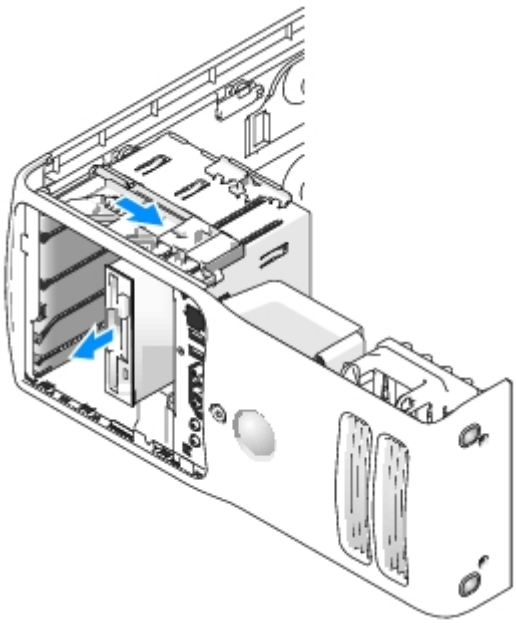
NOTE: If you are adding a floppy drive, see "Installing a Floppy Drive."

Removing a Floppy Drive

1. Follow the procedures in "Before You Begin."
2. Remove the computer cover.
3. Disconnect the power and floppy drive cables from the back of the floppy drive.
4. Disconnect the other end of the floppy-drive cable from the system board

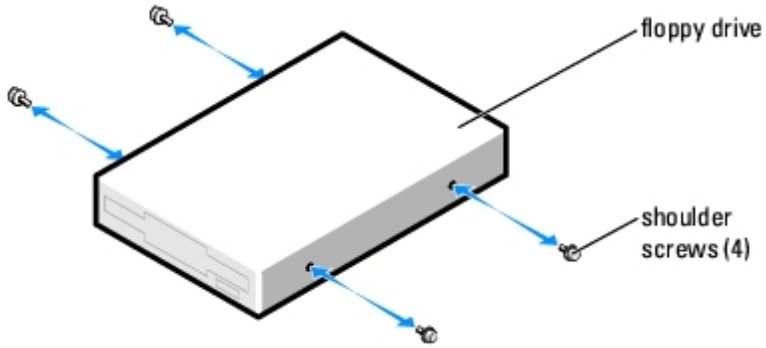


5. Pull the sliding plate to the right and hold in place.
6. Slide the floppy drive out of the floppy drive bay.



Installing a Floppy Drive

1. If you are installing a new floppy drive, remove the shoulder screws from the inside of the drive-panel insert and attach the screws to the new drive.



2. Slide the floppy drive into the floppy drive bay until the sliding plate clicks into place and the drive snaps into position.
3. Attach the power and floppy-drive cables to the floppy drive.
4. Connect the other end of the floppy-drive cable to the connector labeled "FLOPPY" on the system board. For more information on the system board, see "System Board Components."
5. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
6. Replace the computer cover.

NOTICE: To connect a network cable, first plug the cable in to the network port or device and then plug it in to the computer.

7. Connect your computer and devices to their electrical outlets, and turn them on.

   See the documentation that came with the floppy drive for instructions on installing any software required for the operation of the drive.
8. Enter system setup and select the appropriate **Diskette Drive** option.
9. Verify that your computer works correctly by running the Dell Diagnostics.

Media Card Reader

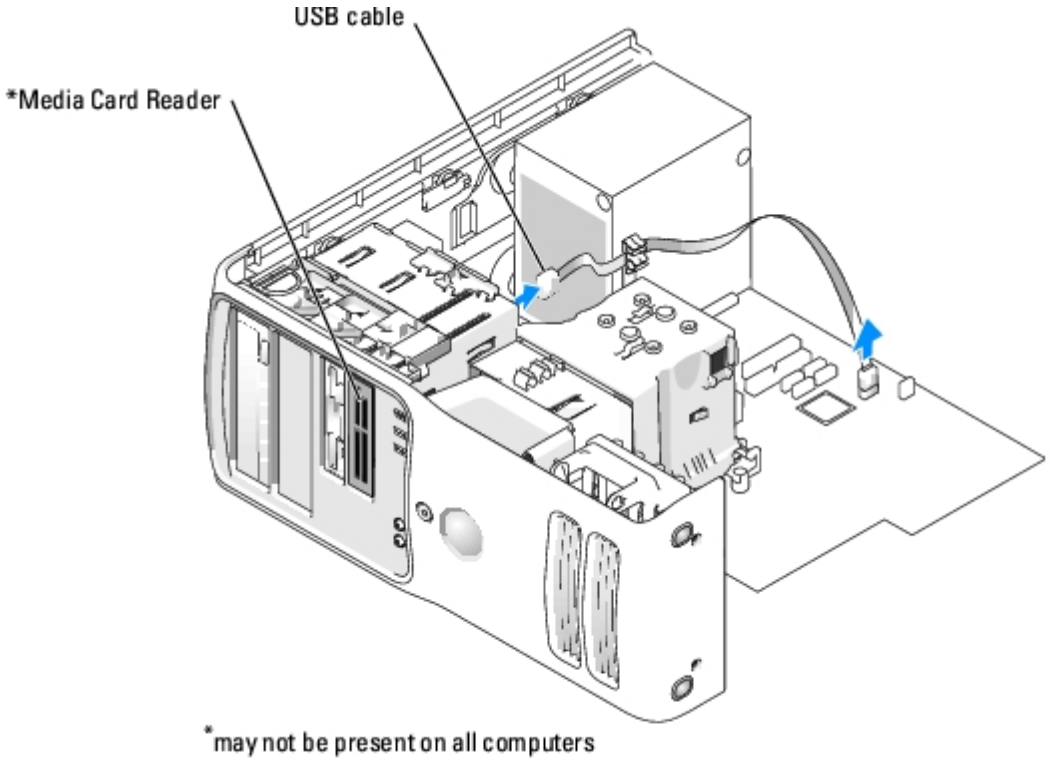
Removing a Media Card Reader

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

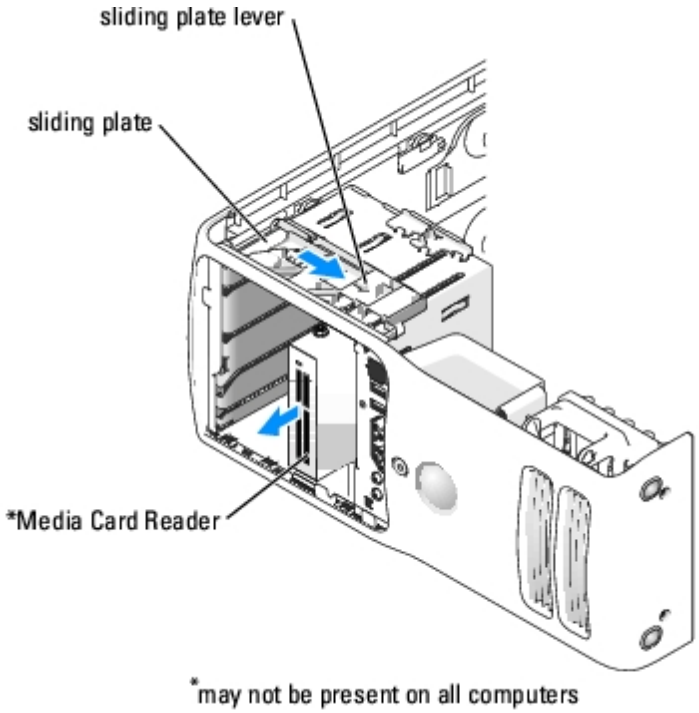
NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in "Before You Begin."
2. Lay the computer on its side so that the system board is on the bottom of the inside of the computer.
3. Remove the computer cover.

4. Remove the drive panel.



5. Disconnect the USB cable on the back of the Media Card Reader from the front panel USB connector on the system board (see "System Board Components") and remove the cable from the clip on the shroud.



6. While pushing on the back of the drive, remove the Media Card Reader by sliding and holding the sliding plate.
7. Replace the drive panel.

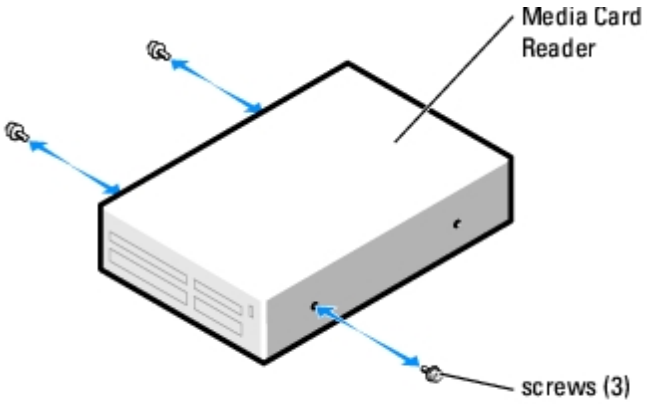
8. Replace the computer cover.

Installing a Media Card Reader

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

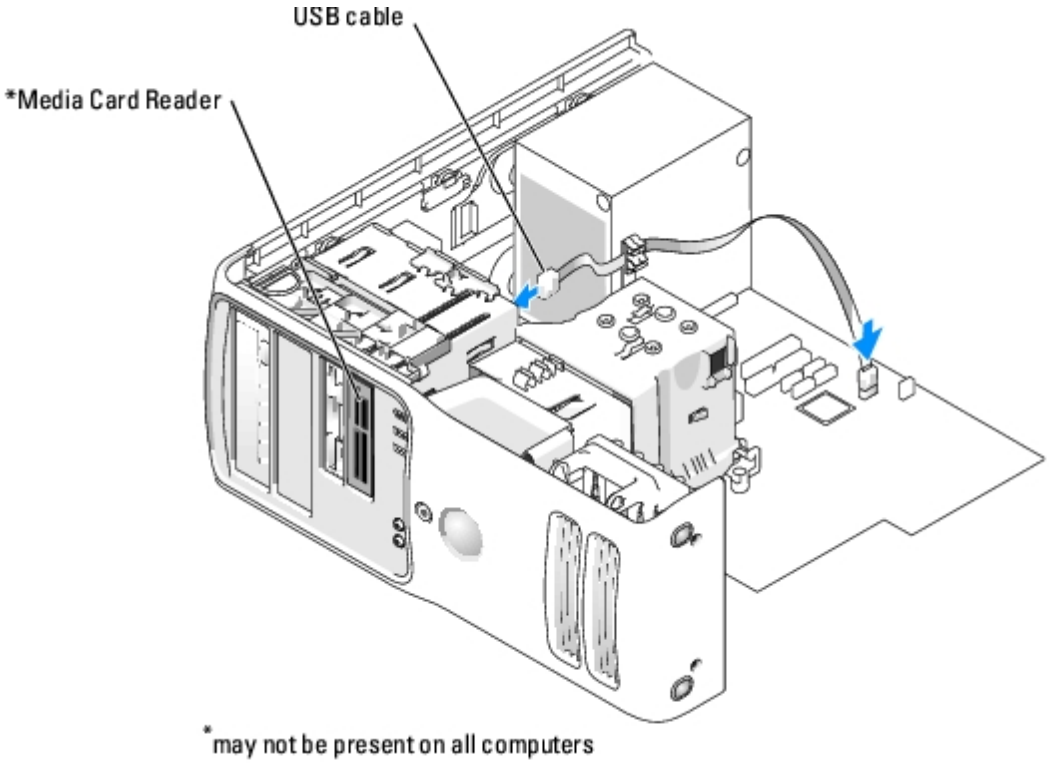
1. Follow the procedures in "Before You Begin."



2. Lay the computer on its side so that the system board is on the bottom of the inside of the computer.
3. Remove the computer cover.
4. Remove the drive panel.
5. Remove the Media Card Reader from its packaging and ensure that all four screws are included.
6. Gently slide the drive into place until you feel a click or feel the drive securely installed.

   Ensure that the Media Card Reader is installed before the FlexBay cable is connected.

7. Connect the FlexBay USB cable to the back of the Media Card Reader and to the Media Card Reader connector on the system board (see "System Board Components").



8. Insert the Media Card Reader into the bay and slide the drive in to seat it in the computer.
9. Route the USB cable through the cable routing clip.
10. Replace the computer cover.

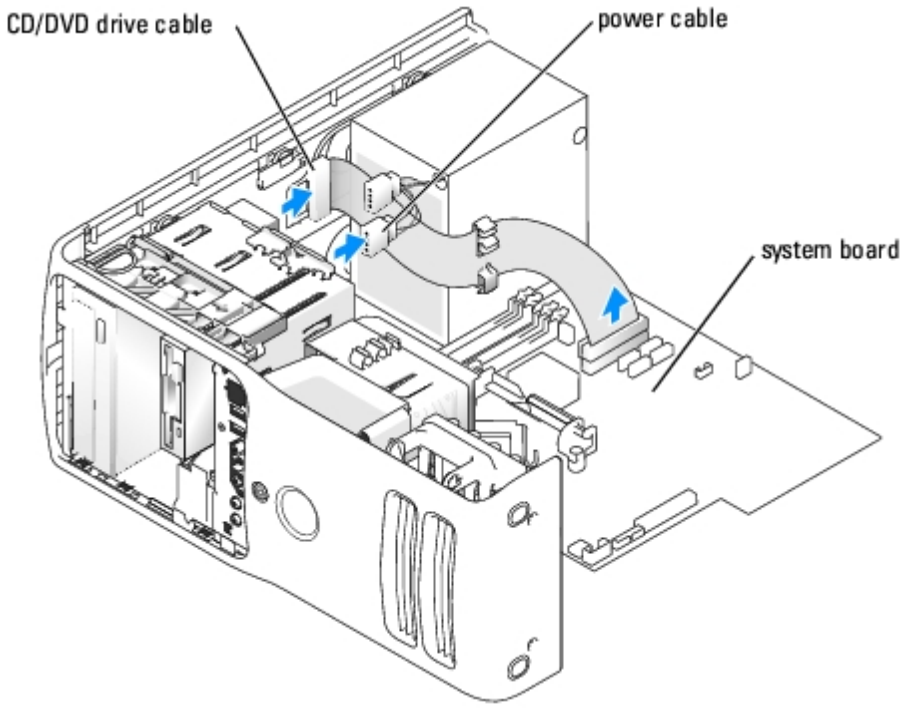
CD/DVD Drive

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.**

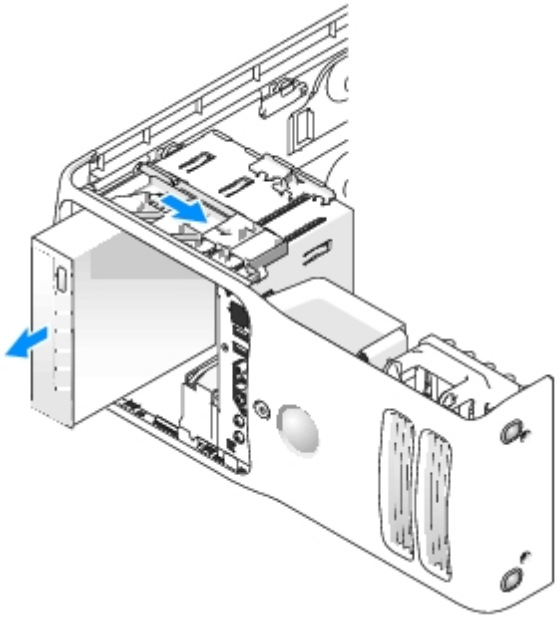
⚠ **CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.**

Removing a CD/DVD Drive

1. Follow the procedures in "Before You Begin."
2. Remove the computer cover.
3. Disconnect the power cable from the back of the drive and the CD/DVD drive cable from the back of the drive and the system board.



4. Slide the drive release mechanism to the right to release the shoulder screw and slide the drive out to remove it from the drive bay.

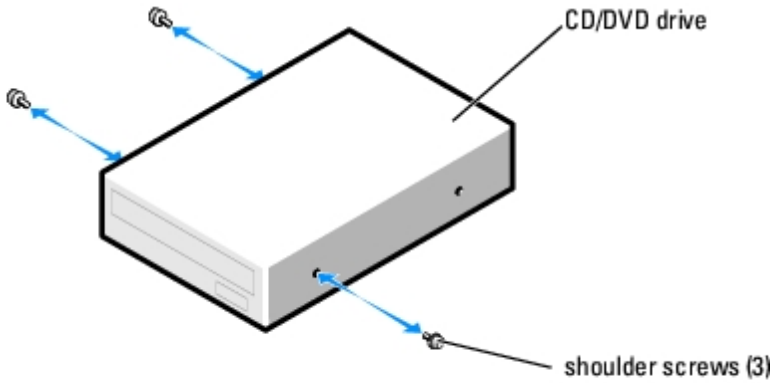


Installing a CD/DVD Drive

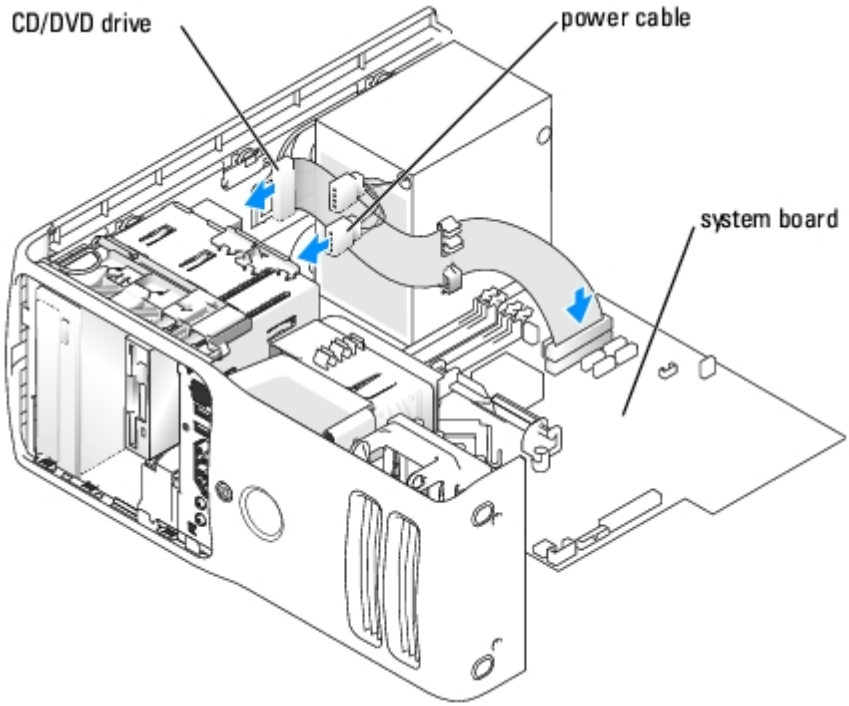
1. If you are installing a new drive, unpack the drive and prepare it for installation.

   Check the documentation that accompanied the drive to verify that the drive is configured for your computer. If you are installing an IDE drive, configure the drive for the cable select setting.

2. If you are installing a new drive, remove the three shoulder screws from the inside of the drive- panel insert and attach the screws to the new drive.



3. Slide the drive into the drive bay until the drive clicks into position.
4. Connect the power cable to the drive and the CD/DVD cable to the drive and system board.



5. If you are installing a new CD/DVD drive rather than replacing a drive, remove the front panel inserts.
6. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
7. Replace the computer cover.

NOTICE: To connect a network cable, first plug the cable in to the network port or device and then plug it in to the computer.

8. Connect your computer and devices to their electrical outlets, and turn them on.

   See the documentation that came with the drive for instructions on installing any software required for drive operation.
9. Enter system setup and select the appropriate **Drive** option.
10. Verify that your computer works correctly by running the Dell Diagnostics.

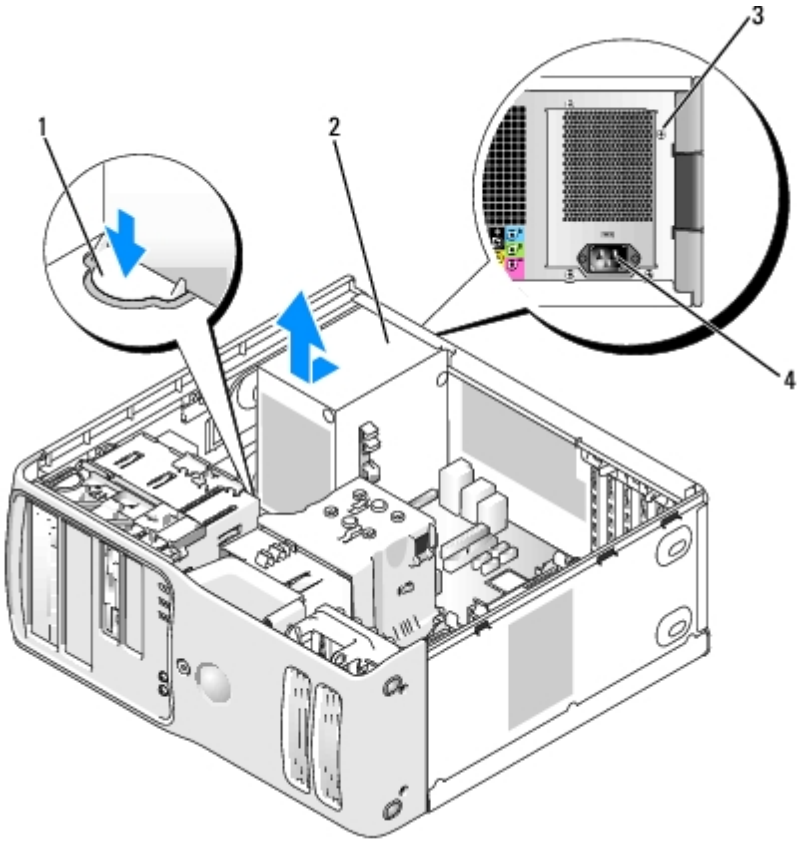
Power Supply

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

Removing the Power Supply

1. Follow the procedures in "Before You Begin."
2. Disconnect the DC power cables from the system board and the drives.

   Note the routing of the DC power cables underneath the tabs in the computer frame as you remove them from the system board and drives. You must route these cables properly when you replace them to prevent them from being pinched or crimped.
3. Remove any cables from the cable routing clip on the power supply.
4. Remove the four screws that attach the power supply to the back of the computer frame.
5. Press the release button located on the floor of the computer frame.



1	release button
2	power supply
3	screws (4)
4	AC power connector

6. Slide the power supply approximately 1 inch closer to the front of the computer.
7. Lift the power supply out of the computer.

Replacing the Power Supply

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

1. Slide the power supply into place.
2. Replace the four screws that secure the power supply to the back of the computer frame.
3. Reconnect the DC power cables.
4. Connect the AC power cable to the connector.
5. Run the cables underneath the clips, and press the clips to close them over the cables.
6. Replace the computer cover.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug the cable into the computer.

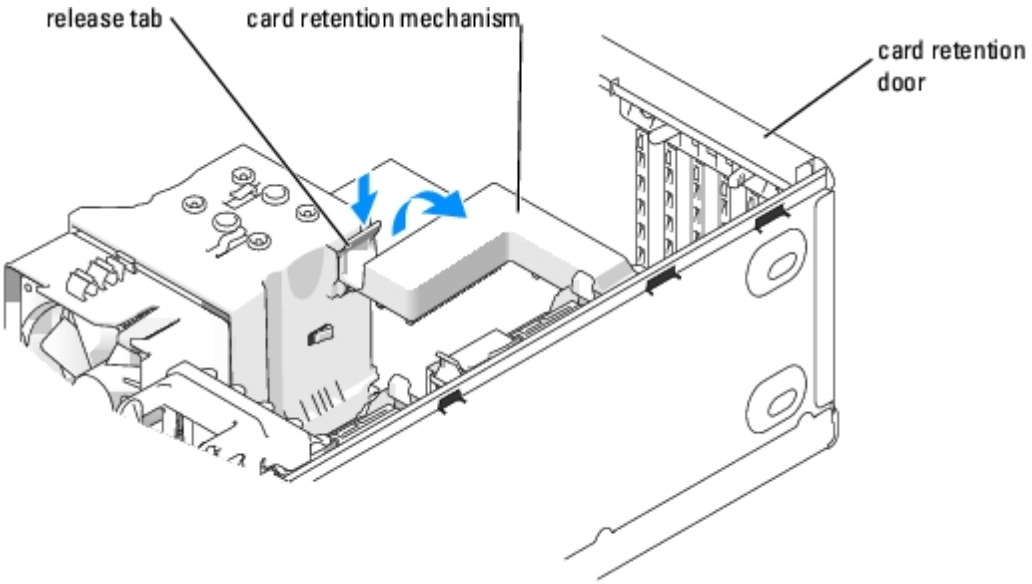
7. Connect your computer and devices to electrical outlets, and turn them on.

Processor

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

Removing the Processor

1. Follow the procedures in "Before You Begin."
2. Remove the computer cover.
3. If your computer includes a card retention mechanism to secure the x16 card in place from the top:
    a. Pivot the mechanism upward and gently press the release tab downward to release the mechanism from the two tab slots holding it in place.

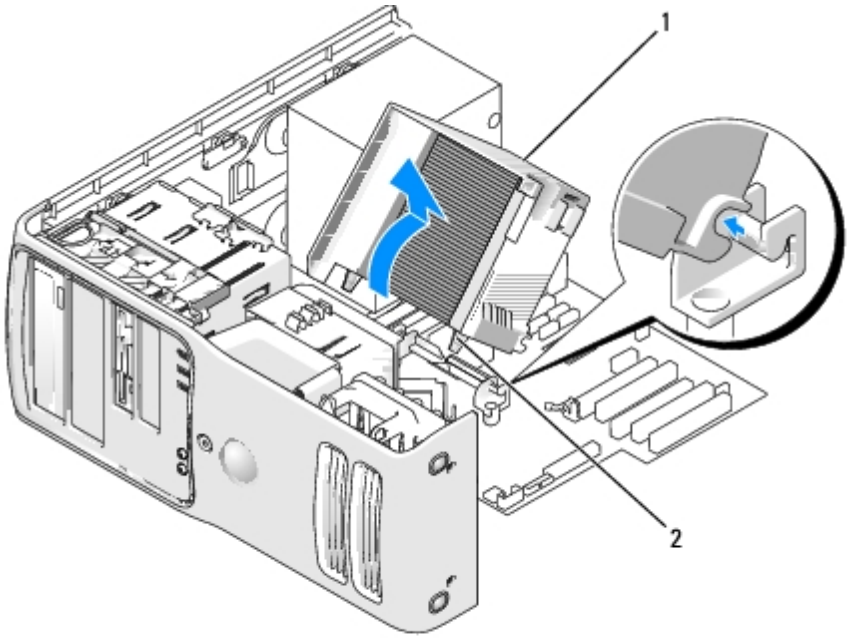


b. Set the retention mechanism aside in a secure location.

4. Use a long Phillips screwdriver to loosen the two captive screws on each side of the heat-sink assembly.

CAUTION: Despite having a plastic shield, the heat-sink assembly may be very hot during normal operation. Be sure that it has had sufficient time to cool before you touch it.

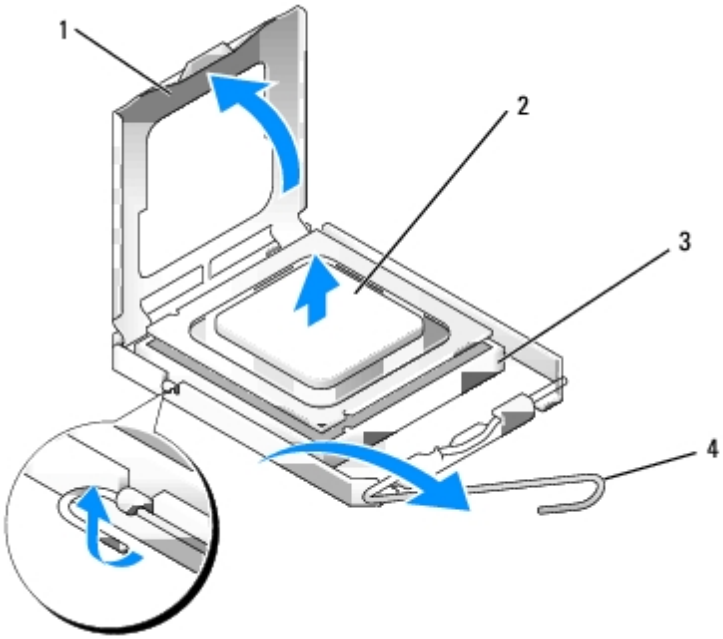
5. Rotate the heat-sink assembly toward the rear of the computer, and remove it from the computer.



1	heat sink and fan shroud assembly
2	captive screw housing (2)

NOTICE: If you are installing a processor upgrade kit from Dell, discard the original heat sink. If you are not installing a processor upgrade kit from Dell, reuse the original heat sink when you install your new processor.

6. Place your finger upon the hook end of the release lever, then push down and out to release it from the tab that secures it



1	processor cover
2	processor
3	socket
4	release lever

7. Release the release lever and lift the processor cover.

NOTICE: When the release lever is freed, the processor may shift in place. Before securing the processor cover after it has been opened, ensure that the notches on the processor are aligned with the notches on the socket.

NOTICE: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

8. Gently remove the processor from the socket.

   Leave the release lever extended in the release position so that the socket is ready for the new processor.

Installing the Processor

NOTICE: Ground yourself by touching an unpainted metal surface on the back of the computer.

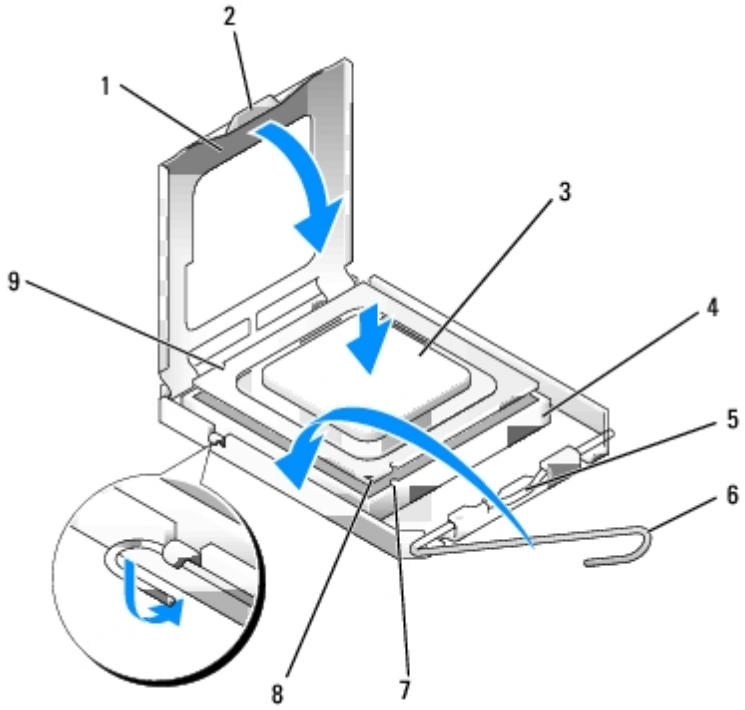
NOTICE: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

1. Unpack the new processor, being careful not to touch the underside of the processor.

NOTICE: You must position the processor correctly in the socket to avoid permanent damage to the processor and the computer when you turn on the computer.

2. If the release lever on the socket is not fully extended, move it to that position.

3. Orient the front and rear alignment notches on the processor with the front and rear alignment notches on the socket.
4. Align the pin-1 corners of the processor and socket.



1	processor cover	6	release lever
2	securing tab	7	front alignment notch
3	processor	8	socket and processor pin-1 indicator
4	processor socket	9	rear alignment notch
5	center cover latch		

NOTICE: To avoid damage, ensure that the processor aligns properly with the socket, and do not use excessive force when you install the processor.

5. Set the processor lightly in the socket and ensure that the processor is positioned correctly.
6. When the processor is fully seated in the socket, close the processor cover.

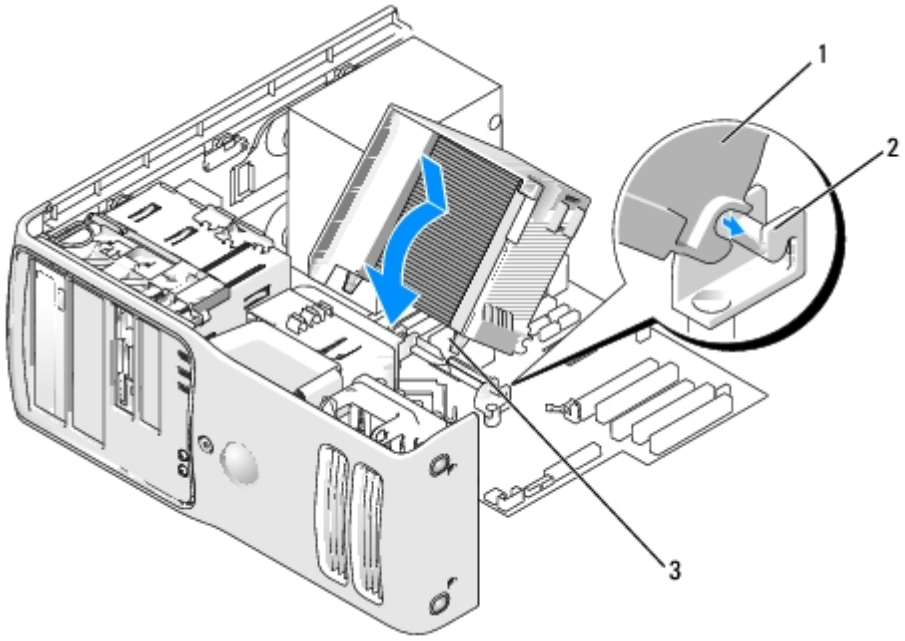
   Ensure that the securing tab on the processor cover is positioned underneath the center cover latch on the socket.
7. Pivot the socket release lever back toward the socket and snap it into place beneath the securing tab.

NOTICE: If you are not installing a processor upgrade kit from Dell, reuse the original heat-sink assembly when you replace the processor.

If you installed a processor replacement kit from Dell, return the original heat-sink assembly and processor to Dell in the same package in which your replacement kit was sent.

8. Install the heat-sink assembly:
   a. Place the heat-sink assembly back onto the heat-sink assembly bracket.
   b. Rotate the heat-sink assembly down towards the computer base and tighten the two capture screws.

NOTICE: Ensure that the heat sink is correctly seated and secure.



1	heat sink and fan shroud assembly
2	heat-sink assembly bracket
3	captive screw housing (2)

9. Replace the computer cover.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug the cable into the computer.

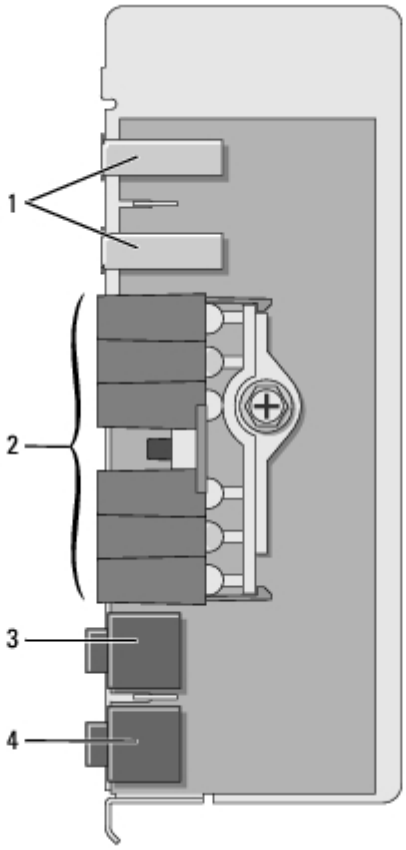
10. Connect your computer and devices to electrical outlets, and turn them on.

I/O Panel

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

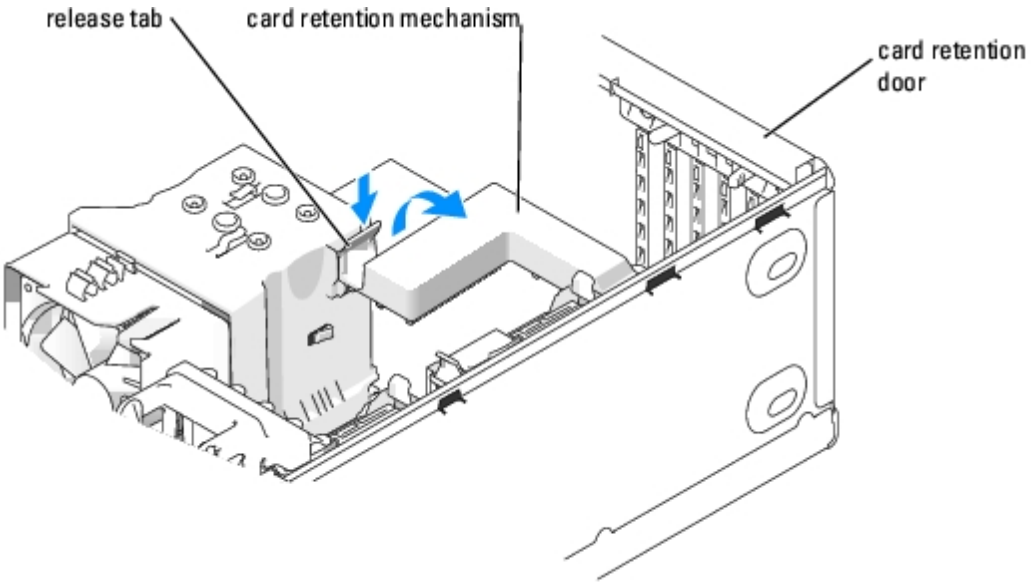
I/O-Panel Components



1	USB ports
2	diagnostic, hard-drive activity, and network lights
3	headphones connector
4	microphone connector

Removing the I/O Panel

1. Follow the procedures in "Before You Begin."
2. Remove the computer cover.
3. If your computer includes a card retention mechanism to secure the x16 card in place from the top:
    a. Pivot the mechanism upward and gently press the release tab downward to release the mechanism from the two tab slots holding it in place.

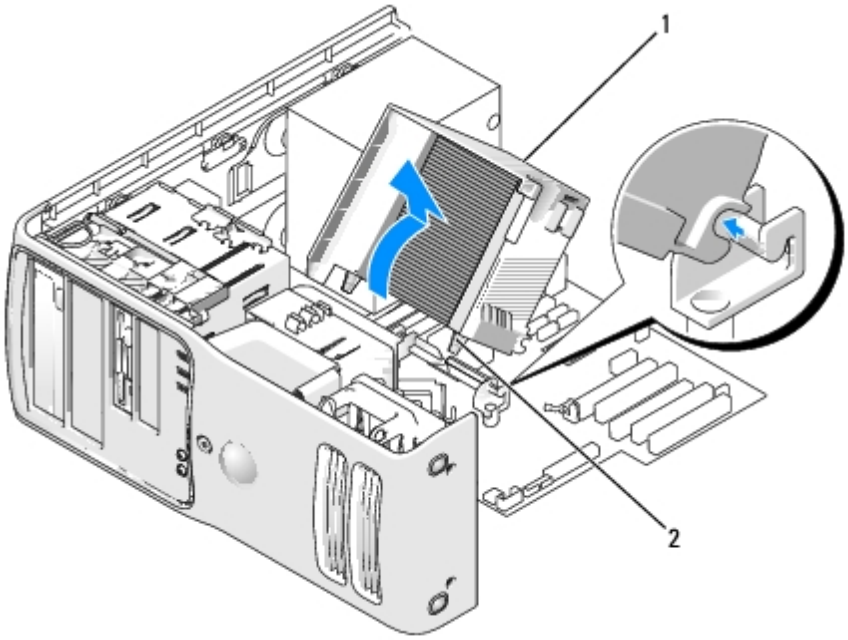


b. Set the retention mechanism aside in a secure location.

4. Use a long Phillips screwdriver to loosen the two captive screws on each side of the heat-sink assembly.

CAUTION: Despite having a plastic shield, the heat-sink assembly may be very hot during normal operation. Be sure that it has had sufficient time to cool before you touch it.

5. Rotate the heat-sink assembly towards the rear of the computer, and remove it from the computer.

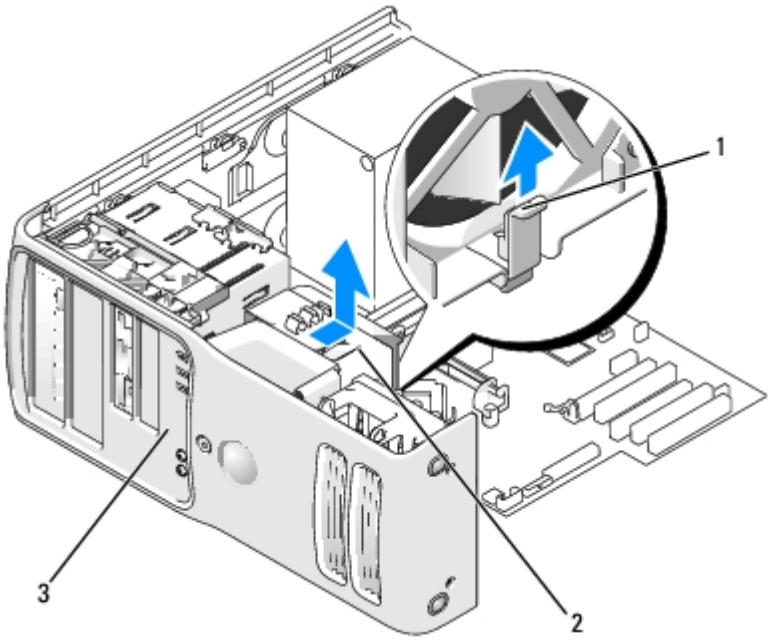


1	heat sink and fan shroud assembly
2	captive screw housing (2)

6. Place the heat-sink assembly on its side in a safe place.

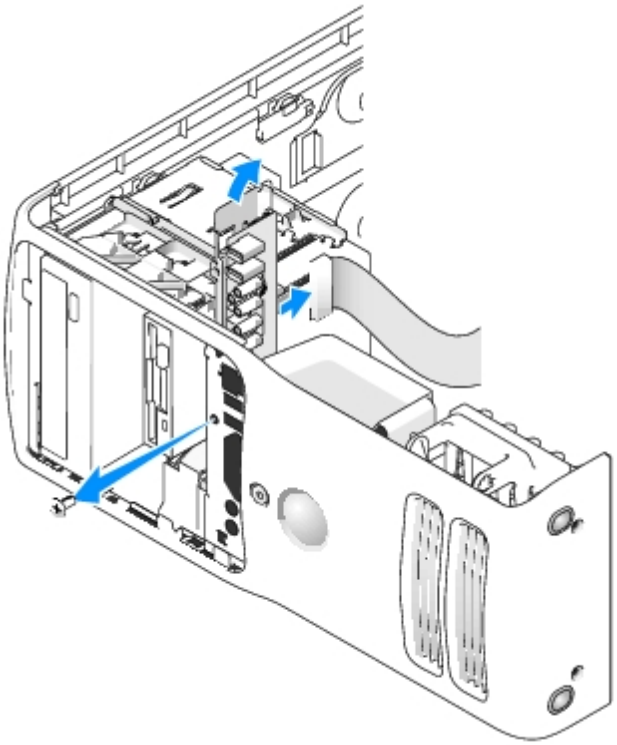
7. Disconnect the system fan cable from the system board.

8. Ensure that all cables have been removed from the routing clips on the top of the system fan assembly.



1	heat sink and fan shroud assembly
2	captive screw housing (2)
3	drive panel

9. Lift the fan release lever, then slide the fan toward the back of the computer to release it from the bottom cover.
10. Remove the fan from the computer.
11. Disconnect the control-panel cable from the I/O panel connector by pulling with the cable loop.
12. Remove the drive panel.
13. If an optional sound card is installed, disconnect the cable from the edge of the I/O panel.
14. If an optional IEEE 1394 cable is installed in the front port, remove the cable from the front of the computer by following the instructions that came with the connector.
15. Remove the mounting screw from the I/O panel.



16. Remove the I/O panel from the computer.

Replacing the I/O Panel

Follow the removal procedure in reverse order, ensuring that the tabs on the top panel, bottom panel, and front panel are secure.

Battery

Replacing the Battery

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

NOTICE: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer.

A coin-cell battery maintains computer configuration, date, and time information. The battery can last several years.

If you have to repeatedly reset time and date information after you have turned on the computer, replace the battery.

CAUTION: A new battery can explode if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

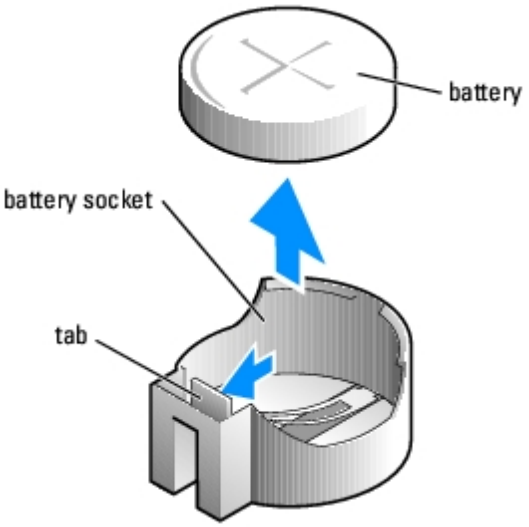
To replace the battery:

1. Record all the screens in system setup so that you can restore the correct settings in step 9.
2. Follow the procedures in "Before You Begin."

3. Remove the computer cover.
4. Locate the battery socket.

NOTICE: If you pry the battery out of its socket with a blunt object, be careful not to touch the system board with the object. Ensure that the object is inserted between the battery and the socket before you attempt to pry out the battery. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.

5. Remove the battery by carefully prying it out of its socket with your fingers or with a blunt, nonconducting object such as a plastic screwdriver.
6. Insert the new battery into the socket with the side labeled "+" facing up, and snap the battery into place.



7. Replace the computer cover.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

8. Connect your computer and devices to electrical outlets, and turn them on.
9. Enter system setup and restore the settings you recorded in step 1.

CAUTION: For instructions about how to safely dispose of a battery, see your Product Information Guide.

10. Properly dispose of the old battery.

System Board

Removing the System Board

CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the cover.

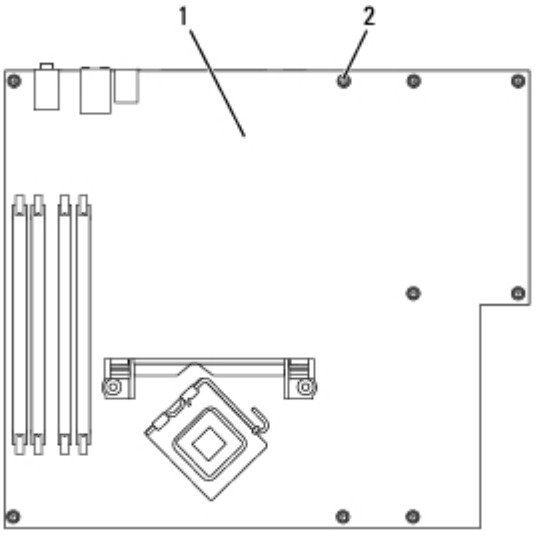
NOTICE: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to

dissipate any static electricity that could harm internal components.

1. Shut down the computer through the **Start** menu.
2. Ensure that your computer and attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your computer, turn them off now.

NOTICE: To disconnect a network cable, first unplug the cable from your computer and then unplug it from the network port or device.

3. Disconnect any telephone or telecommunication lines from the computer.
4. Disconnect your computer and all attached devices from their electrical outlets, and then press the power button to ground the system board.
5. Open the computer cover.
6. Remove any components that restrict access to the system board (CD/DVD drive(s), floppy drive, hard drive, I/O panel).
7. Remove the heat-sink assembly and processor.
8. Disconnect all cables from the system board.



1	system board
2	screws (10)

9. Remove the 10 screws from the system board.
10. Slide the system board assembly toward the front of the computer, and then lift the board away.
11. Place the system board assembly that you just removed next to the replacement system board to ensure that it is identical.

Replacing the System Board

1. Gently align the board into the chassis and slide it toward the back of the computer.
2. Replace the screws on the system board.
3. Replace any components and cables that you removed from the system board.

4. Reconnect all cables to their connectors at the back of the computer.
5. Replace the computer cover.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug the cable into the computer.

6. Connect your computer and devices to electrical outlets, and turn them on.

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Replacing the Computer Cover

Dell™ Dimension™ 9150 Service Manual

CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the Product Information Guide.

1. Ensure that all cables are connected, and fold cables out of the way.

   Gently pull the power cables toward you so that they do not get caught underneath the drives.
2. Ensure that no tools or extra parts are left inside the computer.
3. Close the cover:
   a. Pivot the cover down.
   b. Press down on the right side of the cover until it closes.
   c. Press down on the left side of the cover until it closes.
   d. Ensure that both sides of the cover are locked. If not, repeat all of Step 3.

NOTICE: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

Connect your computer and devices to electrical outlets, and turn them on.